

Aviation News

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Sign Contracts for 93 Four-Engine Transports: Presidents of three airlines meet at New York to make "on-the-line" commitments with Douglas Aircraft Co. for DC-4 and DC-6 transports. William A. Patterson, United Air Lines, and Donald W. Douglas sign as (left to right) Capt. Eddie Rickenbacker, president of Eastern Air Lines and an interested observer, looks on, and A. N. Kemp, American Airlines, and Harold J. Roig, Pan American-Grace Airways, await their turn. (Story on Page 7).

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More output per pound...

with this line of 28.5-volt d-c generators for aircraft

Fighters and bombers need lots of electrical power—but they watch their weight like a beautiful woman. Yet the design of electrical apparatus for aircraft must consider more than just weight reduction—there are factors of vibration, cooling, and brush wear that must be met.

The five d-c generators shown at right represent the range of Westinghouse units that are meeting this exacting service. Their weight-output ratio is exceptionally favorable.

FOR EXAMPLE:

TYPE	AMPERES	SPEED	WEIGHT
D-4	300	1000-6000 rpm	33 lbs.
D-5	300	2000-1200 rpm	33 lbs.
D-6	300	1000-6000 rpm	33 lbs.
D-7	300	2000-1200 rpm	44-71 lbs.
D-8	300	4000-1800 rpm	46-71 lbs.

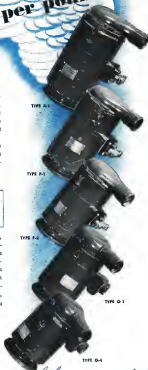
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Westinghouse
PLANTS IN 32 COUNTRIES OFFICES EVERYWHERE

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THE AVIATION NEWS

Washington Observer

INDUSTRY FUTURE.—The dominating theme among the leaders of the aircraft industry at their recent meeting in Washington was that, while there are many factors bearing on the problems of reconstruction and conversion, the industry is entering a new era and ultimately will emerge as not only a strong industry, but a vital force in the economic future of the nation. Many an observer and official in Washington got a new and impressive picture of the aircraft manufacturing industry as a result of the meetings of the Aeronautical Chamber's Board of Governors. The press conference at which the presidents of major companies laid themselves open to questions from the Washington press produced an excellent general reaction.

AIRPORT FUNDS.—Municipalities are insisting that airport funds continue to go directly from the federal government to cities and counties, rather than be channeled through agencies at the state level. Conference of Mayors and Municipal Law Officers will put their weight behind the campaign. City-county groups must that airports are not comparable to highways, say Civil Aeronautics Administration officials. Local pressure and won't need a buffer of stop-avision commissions. Commissioners will back handling of funds at state levels. One state, South Carolina, probably will take over all airports for operation after war. It now maintains them, except where they are under federal control.

AUTOMOTIVE BLAST.—The Automotive Council for War Production has had harsh words for the government's reconstruction program lately, charging among other things that various Washington agencies are guilty of pro-

crastination in putting into effect policies formulated by other agencies in effecting reconstruction problems. The council further charges conflict between current regulations and adequate steps to make practical preparations for reconstruction. Briefly, the automotive people don't believe the nation will be prepared for V-Day and that the Washington agencies should move with the same speed on conversion that is being made by the Allied armies across Europe.

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AUTOMOTIVE OUT OF AIRCRAFT.—In connection with the surplus problem, it is now generally believed in Washington that the automotive industry, currently heavily engaged in aircraft work, will return to manufacture of automobiles as soon as possible. It is pointed out in Washington that the automotive industry each day contributes to the eventual aircraft surplus while each day the shortage of automobiles increases. While automobile manufacturers probably will move out of the air-frame business, the manufacture of engines is something else again, and old-line aircraft engine makers may find additional competition on their heads.

WAGE STABILIZATION.—Probable impact of large scale industrial inactivation after the defeat of Germany on the wage stabilization policy is receiving serious consideration by the War Labor Board and other officials in Washington. Two reports are as the way which undoubtedly will influence the decision to recommend a change in the Little Steel formula which limits general wage increases to 15 percent of the January, 1941, level. One of these is from the panels seated in hear AFL argu-

Army's huge new plane, the B-29 Superfortress bomber takes off



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This Peace Talk Makes Sense

You don't have to translate the language of a Mustang's 30 calibre guns or the 75 millimeter cannon talk of a Mitchell bomber. The Japs already understand. So do the Nazis. So let's keep talking. You bet you can help! Think of it this

way. The Bonds you buy help build these fast-talking planes. The waste fat you collect helps arm them. Waste paper helps ship them, and gasoline flies them. Wouldn't you like to say a few words of this kind of "peace talk," too?



North American Aviation Sets the Pace

PLANES THAT MAKE HEADLINES... the B-25 Mitchell bomber, A-7G Twin combat trainer, P-51 Mustang fighter (A-36 fighter bomber), and the B-24 Liberator bomber. North American Aviation, Inc. Member Aircraft War Production Council, Inc.

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September 18, 1944

Three Airlines Place \$50,000,000 Order for Douglas Transports

Contracts for 98 Douglas DC-4 and DC-6 transports signed by American, Panagra, and United; report more to come.

By MERLIN MICKEL

A substantial portion of the immediate post-war big plane market was absorbed last week when American Airlines, Panagra and United Air Lines agreed to purchase 33 four engine Douglas transports, with more to come.

The transaction, done in New York with ceremony, provided the dotted line aspect of an agreement that has existed in one form or another since before the war, when various deals were on for the DC-4s that would up in military service as C-54s.

Two Types—American signed for 25 DC-4s and 30 DC-6s, United for 15 DC-4s and 20 DC-6s, and Pan American for three DC-6s. Cost of the 98 DC-4s and 33 DC-6s is expected to run over \$50,000,000. United expects to swell the total to 108 in a few days by contracting for 15 additional DC-4s. This company announced last January it would buy 47 DC-4s and 39 DC-6s or five three-engine planes in the next year immediately following the war.

KAL May Buy—American plans to add to its order, and Eastern Air Lines, one of the four that had the planes as order when the war started, is still negotiating. Douglas says other large operators here and in foreign countries are interested.

Two other lines, Pan American and Western Air Lines, participated with these four last December in announcing details of the DC-4 and describing it as the type of plane that will be flown transcontinentally with two or three stops. They were silent, however, at the New York meeting.

Presidents Sign—The other lines were represented by their presidents. A. M. Karpis signed for American, Harold J. Rogg for

Panagra, and William A. Patterson for United. Capt. Eddie Rickenbacker of Eastern was an observer.

Donald W. Douglas conducted the signing rite for the company of which he is president, and the press conference that followed.

The new contracts bring Douglas to the threshold of civilian production with commercial orders totaling more than \$100,000,000. This is more than three times greater than any previous peak of non-military orders in the company's 23 years.

DC-4 Cost \$400,000—Final price of the planes involved in the contracts probably will depend on the quantity produced. United's President Patterson expects the DC-4s to cost around \$400,000 each, and the DC-6s about \$500,000. Estimates last October were that the DC-4s might cost approximately

\$400,000 a piece. This contrasts with a \$1,500,000 price tag on the original DC-4, designed prior to 1940 under arrangement with Eastern, United, TWA, American and Pan American.

Working on Financing—As to financing problems, Patterson was quoted to the effect that a chattel mortgage arrangement might be more suitable than equipment trust, although the final decision must await existing conditions when the planes are in production. Whatever the airline executives thought when the deal was made, it had a salutary effect on the stock market. New York papers acted strong advances in aviation shares, both transportation and manufacturing, with Douglas stock up 2 1/2 points to a new high for the year. The bond was reflected in the general market advance of a quarter point.

Delivery Dates Uncertain—When commercial production of the big planes can start obviously is indefinite, but Douglas amplified his statement that the order will in no way interfere with his company's military production. He believes victory in Europe will be followed by Army and Navy personnel to go ahead.

Others speculated this delivery



An artist's cross-section drawing of the DC-6

might be possible next date, since the manufacturer expects the first commercial planes to be ready in one month after work on them has begun. An advantage lies in the fact that most of the machine-tool equipment that has been used in making the C-44, military version of the DC-4, of which the first version was turned out after Pearl Harbor, can be adapted readily.

Pressure Cables for DC-4-Booth DC-4 and DC-6 are well known in industry circles. Both will be commercial developments of the C-44. Douglas describes the DC-4 as a four-mile-a-minute, 44-passenger and cargo transport plane with 1,450 hp. Pratt & Whitney twin-Wasp engines, the DC-4 as a five-mile-a-minute 58 passenger and cargo air liner equipped with 2,100 hp. double-Wasps. Each will have a crew of five. The DC-6, which is to have a pressurized cabin, as a sleeper plane would carry 24 sleepers and two sitting passengers.

Each plane will have a wing span of 117' 6". Length: DC-4, 60' 11"; DC-6, 100' 7". Height: DC-4, 23' 5 1/2"; DC-6, 36' 3". Both require landing gear, fully retractable. Hamilton Standard hydrodynamic propellers. Maximum cruising speed: DC-4, 350 mph; DC-6, 334 mph. Normal cruising speed at 60 percent rated power at 10,000 ft.: DC-4, 320 mph; DC-6, 375 mph. Stalling speed for both, 50 mph. Fuel capacity: DC-4, 3,577 gal.; DC-6, 2,577 gal. Range: DC-4, 3,610 mi.; DC-6, 2,713 mi. Wing loading: DC-4 (at gross weight of 12,400 lb.) 44.9 lb. per sq. ft.; DC-6 (at gross weight of 60,000 lb.) 55 lb. per sq. ft. The airline president estimates that the DC-6 will make possible coal-to-coast schedules of 8 1/2 hours and Chicago to New York time of 2 hours 40 minutes.

AVIATION CALENDAR

Oct. 8-NASA Region 1 Meeting, Dayton, Ohio.
Oct. 10-11th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 12-13th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 14-15th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 16-17th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 18-19th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 20-21st Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 22-23rd Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 24-25th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 26-27th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 28-29th Annual Meeting of the American Society of Mechanical Engineers, New York City.
Oct. 30-31st Annual Meeting of the American Society of Mechanical Engineers, New York City.

1,450 HP Engines

Powerplants on the DC-4 commercial airplanes ordered that week by American Airlines and United Air Lines will be more powerful than those used on the military version of the plane. The C-54, which has been recognized as having a takeoff rating of 1,200 hp. The commercial planes will use engines with 1,450 hp, giving them a total of 2,900 hp, as against 1,800 for the C-54.

Navy Reveals Use Of Takeoff Booster

Jet-type unit can one-third to one-half off rate on carrier, permits start with heavier loads; use began in 1941.

Jet-equipped planes that take off in one-third to one-half the normal run have been used by the Navy for more than a year and have proved of material assistance in carrier and flying boat operations. The Navy, in released details of the jet-powered takeoffs, discloses that tests were begun in 1941 at the Naval Academy.

The jet unit is a cylinder full of solid propellant that includes oxygen in the mixture so that it can burn without air. A spark plug sets off the propellant, thrust being obtained through passage of the gas through a convergent-divergent in the tail of the unit. The unit is easily mounted and develops 330 lb. through thrust.

Flight Tests Made—Although experimental tests started in 1941, the first flight test was not made until May 1, 1943, with Marine Corps Capt. William L. Gore at the controls. Captain Gore had accumulated with jet-taken-off experience on his own carrier since before while still a Marine private. The first plane was a Grumman Wildcat fitted with five units. The test was successful. The same plane was flown from a carrier May 16.

During 1943, Aerojet Engineering Corp., of Pasadena, Calif., was given a Navy contract for experimental development of a more powerful unit, which by June, 1943, was developing five times more power than the first jets. Quantity production followed.

The jet units also are being used by the Navy on PBY's and PBX's in batteries of four, six and eight,

permitting greatly increased loads in Pacific transport operations.

Asks Lifting of Ban On Private Flying

Station move expected to effect relaxation of wartime restriction except in vital defense areas.

Further relaxation of existing emergency flight limitations on private flyers appears an early prospect as a result of the reorganization of CAA, Administration of Charles T. Stanton, for removal of the limitations except in vital defense areas and zones of military operations.

The Administration's recommendation was forwarded to the Civil Aeronautics Board last week. War Department authorities approve it, prompt action by the board is expected to remove the limitations except in the defense areas and zones of military operations now.

Probable Restricted Areas—Areas where the regulations would continue include the East Coast zone, east of a line running from Washington, D.C., to Norfolk, Va., and the West Coast zone, extending approximately 100 miles inland, covering part of Washington and Oregon and most of California.

Stanton asked a relaxation of requirements that landings and takeoffs be made at only designated landing areas, and that operators of designated landing areas keep records of flights made from these fields.

He cited the termination of blackouts in England to the board as an indication that "conditions which required the present regulations—these regulations no longer exist."

War-Time Measure—The emergency flight rules in Section 60.65 were established at request of military authorities so that the identity of every pilot and location and destination of every plane in the air would be known to proper authorities.

Last December the CAB ruled that planes flying between cities outside vital defense areas no longer needed to obtain clearances for each flight. Within the last few months the War Department has permitted the easing of civil aircraft control by the Civil Aeronautics Board, which they may be down out of the defense area.

civilian flight restrictions, which now permit private plane owners to fly within the defense zone, subject however to the following minor restrictions:

- Flights must be point-to-point between designated and controlled airports.
- They must be for business reasons or for individual or organizational emergencies in the war effort, for agricultural purposes, or to bring planes into the zone for major repairs not available outside.
- No allowance is yet made for any civilian flight instruction.

Philip G. Johnson Boeing Head, Dies

Philip G. Johnson, 50, president of Boeing Aircraft Company, died September 14, at Wichita, Kan., following a cerebral hemorrhage. He had stopped at the Boeing plant in Wichita.



White Division en route back to his home in Seattle from a visit to Washington. Before he died, he attended the University of Washington, College of Engineering, and started as a draftsman. His rise to executive post of production manager, superintendent, vice-president and general manager, and became president in 1936. He was also a former president of United Airlines Transport Corp., and credited with a major role in the establishment of the Trans-Canada Airlines, which he served as vice-president in charge of operations from 1937 to 1938. The large-scale production of the B-17 Flying Fortress and the B-29 Superfortress by his company were attained during his later term as president when he returned to the Boeing Company in 1939.

Air Talks Expected to Pave Way For World Aviation Agreements

Provisional international route arrangements and accords on granting of transit and landing rights believed likely to result from conference of 50 nations invited to November parity.

The government's announcement last week that it had invited more than 50 countries to an international aviation conference in the United States in November was a cautiously worded document which was described as follows:

The State Department, which administers foreign policy and hence international aviation policy, seeks to avoid all possible points of friction with Congress in this regard.

The administration intends quickly to secure maximum advantages to U. S. air transport on a worldwide basis, stemming from its superior development and wartime capabilities.

That if aviation is to be used as an instrument for promotion of international unity as well as national security, arrangements for the regulation of global trade routes must be arrived at multilaterally and must not exclude the legitimate aspirations of other nations.

These two proposals stated that Provisional world route arrangements should be made at the conference.

The conference should agree that each country participating would accept necessary treaty and landing rights.

This means that the world route map recently made public by the Civil Aeronautics Board probably will be offered as a point of departure and that other nations will come prepared to alter their own maps.

The likelihood that the conference will become a cartographers' session, however, seems to be lessened by the fact that the type of agreement sought on transit and landing rights would virtually assure each nation of the routes it wants.

A provision in the State Department document of such words as "provisional," "transitional," and "interim" indicates that "permanent" arrangements can be left to a later conference or to direct approval by the respective governments. After a proposed aviation council has passed judgment on the "practical experience obtained during the transition period."

Congress' Role — Here Congress

should be able to approve the American delegation's actions, knowing that U. S. air transport would be able to take full advantage of its lead start on an air conference. U. S. powers, but that "provisional" arrangements would be subject to later revision if desirable.

The State Department and "substantial agreement" had been reached on such subjects as right of transit, avoidance of schedules for exclusive rights, application of sabotage, control of rates, certification of airlines, uniform safety standards and navigation aids and use of airports as a national and most-favored-nation basis.

Future—The conclusion was inescapable, despite caution, that the government's statement, that the major air nations must already have decided for more than was indicated on what pattern should be cut at the conference for future air transport.

There was considerable mention of the necessity to plan resumption of international air transportation immediately, as though the Department sought to justify holding such a conference as a necessity. Perhaps this was necessitated by the attitude of the Senate Commerce Committee, which has asked the President to hold up action because of possible changes in legislative policy.

Provisional Arrangement—The question arises as to what "provisional" arrangements the United States might make in the resulting agreement. The logical answer seems to be that at first the ATC and the NATS will be used, and that a switch to the commercial companies will be made at the special meeting they will have been certified by the CAB.

It is significant that the conference, to be attended by more than 50 nations, is the largest ever called, and that the U. S. wishes to send such carriers that the air space of every participating country. It may be assumed that nations without international carrying operations will be encouraged to develop feeder services.

New Unity in Aircraft Industry Demonstrated in ACCA Turnout

Revised Chamber expected to play important role in determining policy with respect to contract termination problems.

By SCOTT HERSHEY

Top executives of the aircraft manufacturing industry who met in Washington during the sessions of the Board of Governors of the Aeronautical Chamber of Commerce demonstrated in their attendance at the industry which will be necessary to meet problems of termination and conversion.

It has been months since all company presidents of major manufacturing firms were held out for a Chamber meeting—although they have done so for meetings of the National Aircraft War Production Council.

Optimistic Pessimist—Among the aircraft executives in any group, there are extreme optimists and some pessimists, but the consensus is that the industry which has weathered many a storm during its comparatively short existence, can weather another and emerge stronger for doing it.

Three principal problems involved in the survival of the industry, as outlined by R. E. Wilson, chairman of the Board of Governors and vice-chairman of United Aircraft, are contract termination, surplus disposal and disposal of surplus plants. While all executives agreed that many of these problems are involved, which complicate these three problems, the industry generally is expecting a retrenchment and welcomes a return to a normal status from its "overstuffed" industry in the world position.

Output After Naval Defeat—Industry leaders had only guess as to the volume of their output after the fall of Germany and there was a feeling that some companies would be able at least to start on conversion shortly after the defeat of the Nazis, others will continue to operate on a scale only slightly less than at present while others, notably Navy contractors, will continue to the final shot at the Japs.

The extent to which the Government reduces horsepower controls also is involved, since it takes a short time to start to increase after war production, little commercial work could be done.

Contract Settlements—Prompt

and fair settlement of aircraft contracts at the time of termination is essential, in the view of industry leaders, to provide funds for rapid reconversion to civilian production and maximum post-war jobs.

They endorsed a program prepared by the Chamber's Contract Termination Committee, which said the aircraft industry went to war on a basis of "best things first" and will not survive except on a termination method embodying these same principles. In the termination phase, the essential first step is a final financial settlement derived from detailed billings and disposal of material.

Post-War Air Policy—The Chamber governors emphasized, too, the need for the country to adopt a post-war air policy and cited an statement of Gen. H. H. Arnold, with whom they conferred, to the effect that the future success of the country depends to a great extent on an adequate air force and

an industry with an ever-increasing technical know-how.

Later developments abroad, in the opinion of the governors, again prove technological progress in aviation is essential to national security. This means the industry must extend research in its engineering laboratories if the United States is to retain its dominant position in military and commercial aviation.

Continuing aerological program, General Arnold said, requires an understanding and cooperative handling of the problems of contract termination, cutbacks, use of Government-owned plants and tools and disposal of surplus combat aircraft.

Kaiser to Produce New Hiller-Copter

Shipbuilder will patent purchase contract over several old-line aircraft companies which bid for manufacturing rights.

Henry J. Kaiser will make his bid in the expanding helicopter development field with Stanley Hiller, Jr., the most advanced model. The Hiller design is generally regarded as the most promising yet tested, and Kaiser was out over several old-line aircraft companies in obtaining patent rights for the design. The 18-year-old inventor's Hiller-copter.

Agreement—Terms of the transaction involve building of a factory in Berkeley, Calif., and an employment agreement between Hiller and Kaiser Cargo, Inc., the company which will develop the helicopter.

Plan 4-Place Model—The first result of the Kaiser-Hiller contract will be the design and construction of a four-place model powered by a 350 hp. engine. The young inventor has been deferred at Navy request to continue his work on the spinning helicopter.

The latest aviation industry leaders conducted by the Aeronautical Chamber of Commerce. Reliable sources report that Republic has a prototype private plane already in the air.

Always, therefore, a military plane builder specializing in fighters and best known for its T-47 Thunderbolt P-47, one of the fastest and heaviest rotating-wing fighters in the air, Republic has grown tremendously in the last few years and should be a formidable competitor in the private plane field.

Control is reported to be easy, and including Mr. Kaiser, several persons have flown it with only five minutes of instruction.

Work to Start on CAA Grid System As Army Eases Air Marker Ban

Relaxation of security measure in all areas but West Coast and Alaska will permit states to begin immediately on approved latitude-longitude program.

By BLAINE STURMFIELD

Army has lifted its ban on air markers, except in the West Coast and in Alaska, and work on CAA's approved latitude-longitude grid system will start immediately in several states, Virginia's charged soldiers and others disclosed by war contract sale orders.

After years of checking with thousands of pilots, and after examination of many proposed systems, CAA has approved a system developed by Blanche Hayes, air marking specialist. In cooperation with CAA's Airways Engineering Division of the Bureau of Federal Airways. The system is designed to cover the entire world if other nations wish to adopt it. Industries that are Canada and Mexico are inclined to accept it.

Air Address—Basic principle of the system is "air address" lettered on the ground, near easily located landmarks. The address is in minutes and tenths of minutes of latitude and longitude as given on standard maps of the Coast and Geodetic Survey. Having read the address on the ground, the pilot finds his present location on his standard grid map. In addition to the air address, the ground marking includes an arrow, pointing to true north, and another arrow

pointing to the nearest landing area, with the distance in miles.

Grid marking will be primarily an aid to coastal flying, which will be prevalent for years, to cause because of cost of instruments and radar may decline slowly, and many flyers will not have time to study their operation. But the record shows that pilot of scheduled transport and other professional operators will use the marking system on occasion to their great advantage.

CAA Rate Advisory Only—For the present, CAA's program is advisory. It has no funds for construction of markers. The work will be done by State and local governments and by private interests. Coast and Geodetic Survey will sell the grid maps, but all will use aircraft manufacturers and other concerns will produce their own versions, many for free-way distribution. Most private flying is done on a short-range basis and one need not have as much as enough. To include sufficient detail, the maps are usually on a large-scale, and complete coverage of the United States makes a large bulletin.

CAA, said, business concerns will be interested in building markers and including their advertising. In fact, several of them did it under the pre-war system, and many have the maps for the future. Such advertising projects could turn out good or bad. If they abide strictly by the standards set up in CAA's bulletin, they will be in a position to market by justifying them as advertising matter, and do not clutter up the night scene with many confusing lights—of which there are already too many—the result could be good. If it is possible commercial sponsors might build a large proportion of the marker system.

Army's Ban Criticized—Many persons who have worked on marker development say the Army's ban was ill-considered and unnecessary. Any invading air forces, if they came by day, could easily find their objectives, and if they came by night, they could

have seen the markers anyway, provided the lights of illuminated coast markers were off. Particularly illogical was the fact that inland markers were allowed to remain, but no new ones could be installed. However, not much harm was done, as the old system consisted only of the names of places and directional indicators.

There is nothing new about grid marking. Grid maps were used long before, and during, the last war. Both the air address and the coordinated grid map have been in use in England for some time. CAA's proposed system is new in use by the armed forces, particularly in fire control by the observation of aviation activity.

Officials said the recent proposals of Contra Aircraft, which include the creation of pylons as the corners of ten-mile squares, while it proved impractical mainly because the pylons themselves would be dangerous obstructions and because they would be hard to find, nevertheless had stimulated interest in the problem. Many markings have been misinterpreted and misused.

Landmarks—Any number of easily discernible landmarks, like road intersections, river crossings and coastlines, mountains, lakes, towns and villages, gas tanks, will be marked. CA's estimate that about 100,000 of these air guides will be required adequately to cover the United States, but more may be provided in time.

CAA is issuing a bulletin for the guidance of persons responsible for the construction of the air guides. The marking may be formed with paint on suitable surfaces, such as rock and hard-surface roads, with engraved marks on open ground or mountain side with shrub plantings on lawns and parkways, with porcelain letters mounted on posts in deserts and areas subject to erosion in regions where snowfall is deep. Lettering may have to be placed on signs, grass elevators, large buildings.

Only Ads to Be Illuminated—So far, only markers planned by advertising concerns are to be illuminated. Mrs. Hayes said she experienced for a year or so with luminous paint, without success. It cannot be seen from any practical height. Of course reflecting prisms could be used, because they would reflect no light to reflect. Gaseous tubing and hooded electric lights are the only practical means of lighting the markers. Where paint is used, choose yellow and black, or in-



Kaiser Examines New Helicopter: Henry J. Kaiser and 15-year-old inventor Stanley Hiller, Jr., inspect the Hiller-copter after Mr. Kaiser had flown it on a test hop.

normal orange and white, are recommended for high visibility.

At this stage of the program, when contact flyers are not supposed to be out at night, most of the markers will go unlighted. But to be of real value to commercial aviation, the guides will have to be lighted. Furthermore, the time may come when personal planes will be flown in large numbers by night. For instance, direct lift machines, which probably can be flown low and slow for safety in darkness and overcast, could bring about prevalent personal night flying. It is a safe bet that the advisory system will be lighted in time.

Standard Oil Program—Standard Oil Co. is planning a program of lighted markers, and has already turned one on at Charleston, W. Va. Extent of this and other companies' plans have not been made known. Several mills in Texas have placed lighted markers on their roofs.

Seven states have set up funds and are instituting air guide programs. Alabama, Arkansas, Tennessee, Texas, Missouri, Minnesota, and Ohio. Most states now have aeronautical commissions which handle such projects. In the case of Texas, however, marker plans are in the hands of the governor. Ohio has legislation making the establishment of markers compulsory by all its municipalities. The state itself needs the guides for these municipalities, which do not, legally, and charges the cost to them.



Fairchild's C-62 Makes First Flight Arthur's drawing of Fairchild's new cargo plane built for the Army and designed to operate from airfields of limited size. Details of construction are restricted but the all-steel plane said to have a range excess of 3,500 miles and to be easily adaptable to peace-time commercial service. This drawing first appeared in AVIATION NEWS on October 4, 1943.

SWPA Studies Disposal of Planes Not Salable on Civilian Markets

Trains moving at rapid rate and good prices but release of tactical craft to RFC for liquidation presents serious problem.

By WILLIAM G. KEY

Chief emphasis of the Aviation Division of the Surplus War Property Administration has turned to studies of means of handling planes that will not be salable on the civilian market.

Sale of transport through the Defense Plant Corp., with cooperation of the Civil Aeronautics Administration unit that handled the WTS program, is proceeding smoothly. The first group of WTS planes—some 5,400—are virtually cleared out and service trainers are now following them on the bid block. There will be about 6,000 of these service trainers available for these current sales.

Worst Handle Passed—Surplus officials believe the worst handle in the handling of the lightplanes has been cleared, although they believe prices will break as the ready market becomes saturated and it appears evident that new planes will soon be available. Prices have taken a downward trend in the past few weeks, although the bid system has tended to keep prices high for desirable lightplanes. Generally speaking, the best of the lightplanes have already been sold.

But the lightplane problem is real in comparison with that which will be faced when tactical types of craft are declared surplus and released to the Reconstruction Finance Corp. for liquidation. This phase of the surplus situation has not been solved, and no attempt is being made to minimize the problem. One battle-worn bomber has been torn down as a test, but the number of man-hours involved has been placed on the restricted list of the Army Air Forces and probably will not be revealed for some weeks. It probably will be found that the man-hours involved in tearing down these planes for salvage will be far in excess of that the revenue derived.

However, SWPA is seeking some means of retaining at least a part of the national investment after these war victory in these planes, realizing the concept that the country must accept them as a total loss. Answers are being sought and the nation's top experts are being called in to advise. But the problem is compounded by the experience with military training gliders, about 1,000 of which have come into the hands of RFC. Apparently they have no utility value, little army value and no logical non-aviation use except possibly as temporary play houses or tool sheds. No solution to their disposition has been found, but any ideas will be welcomed by those responsible for disposal policies.

Transport planes have not yet come into the surplus category, and it is not anticipated that they will for some time to come. A long period in which transports will have to be allocated in foreseen, even after the end of the European phase of the war.

Negotiations are now under way for the sale of a few specialized planes of off-standard type, but no sales have yet been made.

• Wichita Chapter of Committee has issued a color brochure on the Wichita Airport Plan mapping out where future airports within the city will be located. Six locations are checked on the map for proposed airports.

WEST COAST REPORT

Lockheed Engineer Sees 'Copter As Answer to Small Plane Demand

Hall L. Hibbard reveals company's interest in rotary wings, with plans for giant model; says mass production of four- or five-place craft should bring price down to \$1,500.

By SCHOLER BANGS

One of the foremost aeronautical engineers of the United States, Hall L. Hibbard, chief engineer of Lockheed Aircraft Corp., believes that a solution to the small plane problem is within reach.

Some form of helicopter will be the answer to the aviation industry's search for a small, personal aircraft that will be both cheap and safe in operation. Present production of 10,000 a month a four- or five-passenger helicopter of such design should will for not more than \$1,500 and very possibly for less.

Within ten years military aircraft with new source of power will have passed the speed-of-sound "stone wall" and will realize supersonic speeds exceeding, possibly, one thousand miles per hour. Helicopter speed reasonably may be expected to reach 350 miles per hour.

Future land-based air transports may be expected to gross 300,000 pounds.

Contrary to other expressed beliefs, an airplane size increases landing gear weights will not increase. Landing gear weights will remain as a constant of approximately 15 percent of the weight of the airplane.

Two thousand feet should prove to be the maximum length necessary for runways to accommodate the largest transports safely, and provide a safe stop in event mechanical trouble develops up to the moment of lift from the runway.

Hibbard was a dinner guest of West Coast Aviation Writers when he made these observations in Los Angeles last Monday.

His comments may be assessed in infinite definitely the extent of Lockheed's post-war manufacturing interests.

Lockheed Testing Rotors—He disclosed for the first time that Lockheed has been conducting extensive tests of helicopter design in the factory's wind tunnel and wind—

"I don't believe it will be letting

any cut out of the bag to say that during our early tests of rotor combinations we discovered quite by accident one combination that gives one-third more lift than that obtainable by any others tried out."

He said that his company is "pretty well along" in the development of a 194,000-hp air transport model, (Lockheed's Constellation has been designed for a maximum takeoff gross of 14,250 pounds.)

Copter Plan As Aisle—Elaborating on his helicopter interest, Hibbard said Lockheed has extended its research to the point of a part-by-part comparison of a 4-5 passenger helicopter with parts of a marine plane. The helicopter has been determined that on a "man production basis" the cost of building the helicopter will represent the production cost of the automobile.

"The helicopter will be the ideal private aircraft because it will offer extreme safety and will give the owner something he can get home in, and put in his garage."

High Speed Flight—Hibbard also made important observations on problems confronting high speed flight.

When we reach speeds of 400 miles per hour we will have to provide refrigeration for air taken into the cockpit.

"The besting" an airplane takes at high speed is terrific, and we probably will have to provide a cabin with some form of floating air to absorb the bumps and make his flight undisturbed. Building the aircraft structure strong enough to take high speed stresses will not be too difficult.

Super-Sonic Planes—"Super-sonic aircraft will require a radial wing using a knife-edge entering edge at high speeds, and incorporating some mechanism to provide a rounded leading edge for slow speeds and low landing."

While he also said Lockheed is experimenting with small aircraft

designed for private owners, he gave no indication of what the plane, if produced, will offer in the way of size and performance.

C-82 Eyed as New Post-War Contender

Re-entrance of Fairchild Aircraft into the large-plane field was marked by the recent first flight of the C-82, cargo ship built for the Army, which undoubtedly will figure in Fairchild's bid for post-war commercial contracts.

The powerful twin-engine, all-metal, high wing monoplane, designed specifically for operations from dirt and medium size fields, has a range in excess of 3,500 miles.

Easily Adaptable—While it is engineered to meet war needs for cargo, the C-82 is designed for supplies and troops, its advanced design and many innovations make it easily adaptable to peacetime commercial air service. A Fairchild spokesman said the plane and its features (handling, passenger, mail, cargo and cargo of varying size promise it a big role in the post-war air world.

The C-82, according to Paul A. Fennell, assistant general manager, is a direct result of Fairchild's experience as cargo plane development began 10 years ago with construction of the Army C-47, now known as the DC-3. It is designed to carry varying planes for military service.

Small Plane Producer—Fairchild in recent years has specialized in personal craft and utility designs. The small plane division of the company has produced upwards of 8,000 PT-19 primary trainers during the war and the DC-61 military liaison plane, the latter being a mainstay of the Army.

Restrictions—Details are restricted, but the plane is in the \$40,000-pound class, about twice the size and capacity of the familiar Douglas DC-3. Take-off requires only a part of the 3,400 and 3,600-foot runways at the Haguenau airport.

The C-82 has a tricycle landing gear and when on the ground the bottom of the fuselage, which is a square interior, is the height of a trunk platform to make for easy loading and unloading of cargo.

Design—The after-end opens to the height and width of the interior. Tail section is a large fuselage is made position behind the fuselage is made position behind the full design of the big wings.

PRIVATE FLYING

Port Operators Study Progress Of Rent-a-Plane, Air Taxi Project

Services established by Gerald Chatterton of South Dayton airport and Dayton School of Aviation expected to meet rising demand for plane and flying time by returned pilots who wish to continue air activities without necessity of buying planes.

By ALEXANDER MCSURELY

Midwestern airport operators are watching the progress of the Dayton Rent-a-Plane and Air Taxi service, recently established by Gerald Chatterton, operator of the South Dayton airport and the Dayton School of Aviation. Chatterton, a former automobile dealer, has operated airports in the Dayton area for the last five years.

A pilot qualifying for rent-a-plane must have a private pilot's license, be checked out by an instructor from the flying school, and must contract to fly at least 50 hours a year. He can rent a plane for local flights for \$5 an hour, or at a cross country rate of \$3 a day plus 8 cents a mile.

► Road Run—Cross country mile-

age is figured on a road mileage basis rather than by air miles, because of the more exact calculation. Plane renters fly out a form which also calls for signatures of operators of airports at which they stop on a cross country trip.

The same planes are used for the rent-a-plane service as for student flying, so that any ship on the line is available, either for flight training or testing, making a large pool of planes for both purposes. A budget plan for the pilots renting planes, permits them to pay \$50 down, and \$20 a month for 10 months, or a total of \$250 for 50 hours of flying. A pilot who does not fly the full 50 hours in a year, pays \$6 an hour.

► Has 16 Pilots—Chatterton now has 16 pilots signed in the rent-a-plane program, all graduates of his flying school, and believes the service offers a means of keeping private pilots interested in continuing their flying after they are licensed, even if they do not buy planes. He believes the service will take the place of flying clubs at his field, which he estimates costs the average member from \$2 to \$4 an hour.

At only a slightly higher cost the plane renter can have a plane available any time he wants it, he points out. The operator says the rent-a-plane plan is more economical, for any flyer who flies 100 hours a year or less, than the present cost of plane ownership, including insurance, hangar storage, depreciation, and fuel and maintenance.

► Air Taxi Service—The air taxi service likewise operates on a mileage basis, using a two-place Cessna to haul one passenger, and a four-place Waco for transporting two or three persons. Top rate is 26 cents a mile, for two or three passengers, divided proportionately, while the single passenger rate is 15 cents a mile for trips up to 200 miles, with the rates scaling down for longer distances.

Still mindful of his automobile dealer experience, Chatterton is studying the possibility of a post-war plane and auto sales display building, on the Dixie Highway U. S. Route 25, which runs only a short distance from his flying field.

► O. M. Scott and Sons Co., Marysville, Ohio, has issued a booklet entitled "Handfuls of the Future," which is being distributed through the Jay H. Marsh Co., Marion, Ohio. It contains suggestions for building and maintaining bird areas for both large and small birds.



U. S. Army Air Force Plane of B-29 Superfortress

DAGGER-THRUST

where it hurts most!

The great B-29 Superfortresses are CECO equipped.



CARBURETORS
FUEL PUMPS
PROTEK-PLUGS

There is no weaker, built-in-the-back quality about the firm establishment of these massive B-29 Superfortresses at the heart of Japan. The Nips expect them . . . warning systems tell when they're coming . . . fighter planes take off to meet them and ground defenses throw up a curtain of flak. But nothing yet devised can stop these sky-giants from delivering their load of destruction when and where it hurts most.

The skill and genius that designed, engineered, and produced this "bize on wings" is American to the core. It is typically American to build the most powerful and complicated flying mechanism ever assembled . . . and then put it into mass production. This means that each one of the thousands of component parts must be as technically and physically perfect as mass and machine can make it. And further it means constant seeking for new ways to achieve still higher standards of performance, stamina, and dependability.

The CECO carburetors and fuel pumps on the Wright engines powering the B-29—and the CECO engineers and workers here at home—are living up to these specifications.

CHANDLER-EVANS CORPORATION
SOUTH MERIDEN, CONNECTICUT, U. S. A.



Air Taxi, Rent-a-Plane Service Operated Above, billboard advertising, near Wright Field, of the Dayton Air Taxi service, has brought emergency egresses to South Dayton airport, home base of the air taxi. Photo below shows four-passenger Waco used by South Dayton airport for air taxi service to surrounding towns, while several light-planes are used both for rent-a-plane and flight instruction purposes. Gerald Chatterton, operator of the field, is seen in the control tower operating a flash gun signal.



Public's Ideal Plane Specs Studied

New specifications for "Tomorrow's Personal Plane" are being compiled by tabulating a survey of Aircooled Motors Corp., Syracuse, N. Y., Franklin engine manufacturer, which polled air-minded American men and women.

Of those questioned, twenty-four percent replied. Consensus of their requirements is sensible, not beyond reach of present manufacturing, but a little ahead of most designs thus far announced.

SPECIFICATIONS

Low-winged (83.3%); monoplane (87%); landplane (84.9%); Landing gear: retractable (66%); tricycle (34%)

Cruising speed: 115-125 (20%); 125-150 (38%); over 150 miles, (14%).

Construction: fuselage all-metal (55%); wing covering metal (44%).

Landing speed: 35-45 (33%); 45-50 (51%).

Seating capacity four persons (97%); baggage per person 25-30 (94%).

Engine: ana, 65%; air cooled horizontally opposed (57%); 4 cylinders, (25%); horsepower, 100-125 (21%); 125-150 (21%).

Accessories: Electric starter and generator (94%); magnets ignition (61%); radio receiver and transmitter (32).

Propeller: Right-adjustable pitch (49%); constant speed (38%).

Controls and safety devices: Flaps (79%); AOA (85%); two-control (coordinated rudder and aileron) (31%); conventional control (54%).

Price: \$4,500-\$6,000 (22%); \$6,000-\$7,500 (54%).



UTILITY, COMFORT STRESSED IN NEW AERONCAS.

Sleek low-wing Aeronca Arrow, below, now flying at a plastic bonded plywood prototype, will be of metal construction when production begins. Retractable landing gear gives it high performance, with top speed around 140 mph. Newly designed Aeronca Tandem, above, offers considerable improvement in aerodynamic cleanliness, economy, speed, comfort, ease of operation, shortened landing and takeoff runs, over smaller pre-war planes. Tentative price quotations, around \$2,000 for the Arrow, around \$1,000 to \$1,500 for the Tandem, depend on quantity production.



Aeronca Outlines New Sales Plan

Merchandising program seeks to put lightplane marketing on small spot operation on more scientific basis.

Reducing the heretofore haphazard business of personal plane merchandising and small airport operation to a system is the goal of a post-war merchandising plan of Aeronca Aircraft Corp.

Emphasizing rehabilitation of the returned service man by en-

couraging his participation in lightplane sales, the plan also seeks to provide opportunity for war workers and others who may not have other employment when reconstruction begins.

Handbooks—Three handbooks, "How to Make Small Airports Pay," "Why You Should be an Aeronca Dealer," and "Aeronca, the Plane You'll Want to Fly," are ready for distribution to prospective dealers, and a fourth, "The Airplane Dealer's Handbook," is in preparation.

Company distributors and representative dealers are prepared to assist prospective dealers in surveying market areas. Model bookkeeping systems are set up. Promotion work to whet the public appetite for flying and aircraft ownership is outlined. A new insurance plan which the company says "will effect a very substantial saving in insurance premiums to future purchasers of Aeronca planes," is to be offered, backed by "a group of some of the largest mutual insurance companies in the world, with assets of approximately \$100,000,000." While educational aircraft exhibitions are encouraged, the plan frowns on a return of the "daredevil flying circus of yesteryears."

The Birdmen's Perch

Know all **THEY** BY THEIR PRESENTS
THAT
E. B. McClung
has the most complete and up-to-date knowledge of the latest developments in the world of aviation. He is the only one who can tell you the truth about the latest developments in the world of aviation.

PERCH PLOT (Action Ring Road)

This is the only plot in the world of aviation that is so well known to all who are in the world of aviation. It is the only plot in the world of aviation that is so well known to all who are in the world of aviation.

E. B. McClung
The Birdmen's Perch

If you haven't, it's your own fault.

Become all you have to do to get one, is to send us a Little Known Fact About Well Known Plans. Like that one from E. B. McClung, of Kessler, West Virginia.

The new plane wing set of a "just put" can withstand a load of 800 lbs.

Four more items, McClung, and you'll be a professional in the world of aviation. A Little Known Fact like this will do the trick.

The wing set of the B-29 is 20 feet greater than the distance covered (121 feet) by the first successful airplane flight.

Oh, Now it's your turn. Send your L.F.A.W.A.P. to:

Major Al Williams,

aka "Tommy Wing Man," Gulf Airplane Products, Inc.,
Gulf Bldg., Pittsburgh 30, Pa.

THE FEATS OF 2 FEET ...

The B-29 itself does a tremendous job of lifting!

It carries more weight per square foot of surface than any wing ever built. This was achieved by designing a wing—and then gradually adding another wing in the form of huge flap in flight, the

THE HEAT'S ON THE CREWS OF THE B-29'S TOO. HOW ABOUT ANOTHER WAR BOND FOR THEM?



fapt are not an evidence. But when the heat's on—the off and on—adding— they add a whole lot to the performance of the wing.

Gulfair Oil does a tremendous job of lubrication!

It carries terrific weight per square foot of surface in preventing metal-metal contact. We add to this lubricating ability by refining crudes—and then finally adding another refining as the fuel of the Aikler Process! In actual operation, this additional refining step may not be an evidence. But when the heat's on—the off, chills, and other "boom-boom" operations—the Aikler Process adds a whole lot of lubrication to Gulfair!

Gulf Oil Corporation and Gulf Refining Company...makers of

GULF AVIATION PRODUCTS
GULF IS AVIATION—USE IT WISELY



Replica to Franklin survey specified plane like this

SOFT, WE'VE GROWN ON A CYLINDER NEEDS ATTENTION.

BEH, I'M CHECKING THE RINGS OF THAT CYLINDER. REPLACING IF NECESSARY.

YOU CAN'T GET BULL-CHARGE PERFORMANCE WITH BULL-KINGS NOT SHIT WITH YOU USE.

...THAT GOOD GULF AVIATION GASOLINE.

Huge Post-War Lightplane Market Shown in Crowell-Collier Survey

Study reveals that 46 percent of 2500 persons polled plan to buy plane or helicopter; 59 percent of civilians prefer roadable aircraft; military flyers 78 percent in favor of conventional.

Findings of the Crowell-Collier Publishing Co.'s new study on "Tomorrow's Customers for Aviation" are of particular interest to personal plane manufacturers, distributors, fixed base operators and private flyers, since a large portion of the study is devoted to the post-war personal plane market.

Interpreters of the pollers and charts, however, must not lose sight of the background factors supplied with the study, or they are apt to make some erroneous conclusions.

\$2,000 Civilians Favored—The study was made by polling approximately 2,000 civilians from the upper 50 per cent of the urban population in terms of income and living standards, and a group of 500 Army and Navy flyers. Many students of post-war private flying believe a large factor in the market will be the residents of rural areas and small communities in the West and Midwest, who apparently were not polled.

Analyzing the intent to buy a personal plane after the war, the study shows 1 percent of the group expects to buy an airplane first after the war, before any other purchase, and 5 percent will buy an airplane second, and 20 percent expect to buy a plane, and a total of 46 percent expressed some interest in owning a plane or helicopter in the future. At first glance the report appears discouraging, but it is pointed out that the group surveyed is a sample of 16 million families. When the 3 percent represented by the first and second groups is applied to the 16 million families the finding indicates a market for personal planes amounting to approximately 500,000, far above any pre-war markets. Peak years for plane registrations in this country, 1942, showed only 24,026 planes registered.

Readable Plane in Demand—Civilian police preference for a combination automobile-airplane, over either the helicopter or the conventional plane indicated by the study, should serve as a spur to roadable plane builders. Thirty-nine percent favor the roadable

combination as compared to 26 percent voting for the helicopter and 31 percent for the conventional plane. The military poll, however, shows 78 percent favoring conventional planes, 11 percent for the roadable plane and 8 percent for the helicopter. Significant, too, is the finding that 83 percent of civilians wanting helicopters and 77 percent of those wanting roadable planes prefer to wait five or six years after the war to get the vehicle of their choice, if it is not available until then, rather than buy what is available immediately after the war.

\$2,000 Ceiling Favored—Only 11 percent express willingness to pay more than \$2,000 for a plane. For maintenance, fuel storage and repairs, the median estimate is \$50 to \$59 a month. Sixty-eight percent of the civilians and 60 percent of the military flyers ask for four or more seats in their planes, but a majority in both groups indicate they will accept a maximum seating of two persons in the plane, if necessary.

As might be expected, the military flyers want higher speeds than the civilians, while taking into consideration higher cost of opera-

tion. A speed of 100 mph at two cents a mile is selected by 25 percent of the civilians and only 13 percent of the military group, while 24 percent of the military group ask for a top speed of more than 150 mph as against only 12 percent of the civilian buyers asking for such a speed.

Other significant indications of the study:

►Eighty-five percent of the military group interviewed want planes after the war, with an additional 6 percent who might be interested under favorable conditions.

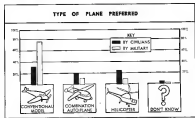
►Of civilians living 30 minutes or more from the nearest airport, 27 percent say development of an airport nearer their homes would increase their interest in private flying.

►Asked if they would buy a plane in place of a car or in addition to a car, 84 percent said the plane purchase would be in addition to the car.

►More men than women want to own planes, with 45 percent of the men interviewed, and 31 percent of the women expressing a desire to own aircraft.

Among the 1 percent who expect to buy a plane before any other major purchase after the war, 50 percent expect to make the purchase within a year and a half after V-day.

More than one-quarter of the military group (27 percent) and only 9 percent of the civilians who had indicated any interest in ownership, think they will be ready to buy a plane within six months after the war.



Readable Planes Preferred—Crowell-Collier study on post-war aviation markets indicates a preference by the civilian public for roadable planes (convertible auto-airplanes) over conventional planes or helicopters, as shown by the above chart.



Like a square peg from a round hole . . .

You have to know what rubber will do before the die is cast

ONE GUY TURNER looked when it turned out a special auxiliary strip was developed . . . and extended. The odd shape of the seal was engineered by men at B. F. Goodrich who have been solving problems like this—rubber extrusions—for dozens of unusual applications.

"Eutectic" is a process where rubber—natural or synthetic—is pressed through precision dies to emerge in a desired shape and form. Designing these dies requires careful engineering

planning due to the peculiar flow characteristics of the rubber used. As shown above, dies often look a lot different than the strip that comes through them.

Another important factor in successful extruding is a thorough understanding of both natural and synthetic compounds. For when compounds change, the shape of the extruded piece may change, due to differences in the amount of swell. Dies must be revised to allow for these differences. You have to know rubber—what it will do and how it will flow—to make successful extrusions.

Although B. F. Goodrich dies already available cover thousands of different shapes, each new application is studied to be sure that the best an-

swers are obtained. If a custom-built die is needed, Blueprints are made and the special shape is produced.

The applications of extruded seals are practically unlimited. So if you have any problem that you think might be solved with a reg. tube, strip, or packing, write to The B. F. Goodrich Co., Automotive Division, Akron, O.

Shipyards or Highways

B. F. Goodrich

FIRST IN RUBBER



AVIATION MEN DISCUSS SOUTH'S AIRPORT PROGRAM

Nationally-known aviation men attending a recent Southeastern Airport Conference at Auburn, Ala., were (right) Ed Nilson, Beech Aircraft; W. T. Piper, president of Piper Aircraft; J. Kirk Beldare, airport consultant of the CAA, Fort Eve, of Southern Airways. At left are E. W. Stanford, Alabama aviation

director, Capt. Guillermo Soria, who is studying American airport construction for the Peruvian government; John L. Sutton, Delta Airlines; D. H. Yarbrough, South Carolina airport engineer; and Stoddard Acker, Birmingham (Ala.) airport manager and consultant to Oklahoma City.

Riddle Brazil School Studied as Pattern

Washington authorities expect other similar plans to be set up to aid South American neighbors in aviation.

Top Washington aviation authorities are watching development of John Paul Riddle's school for aircraft technicians in Sao Paulo, Brazil, where classes of Brazilian students now are being graduated at two-week periods from a student body of 900, built up in less than a year.

These Washington sources believe that the Riddle school is only setting a pattern for many other such schools. The careful selection and training of American instructors is based on a long-term policy of building up South American technical aviation schools as a means of providing the expertise in the south with basic technique for a greatly-expanded air service.

Reported Backed By Arnold—Mechanics and aviation technicians now are being turned out of Riddle's school, the Escola Technica do Aviao, and some details of the school's background and significance were disclosed only last week when it was reported that it had the backing of Gen.

H. H. Arnold, commanding general of the Army Air Force, and civilian aviation authorities.

The Escola Technica was organized at the request of the Brazilian Air Minister, Dr. Joaquim Pedro Salgado Filho, who also has played a large part in the construction of an aircraft engine plant and an aircraft manufacturing plant in that country. Dr. Salgado Filho visited this country in the summer of 1943 to seek assistance with the school project, which forms part of the program of building up the Brazilian Air Force as one of the United Nations forces.

Brazil was taking over anti-submarine patrols in South Atlantic waters, had been freed from the domination of Axis airlines in its domestic commercial aviation and was laying the groundwork for general industrial development of the country. The Brazilian Air Force largely consisted of American Lend-Lease planes and it was imperative that Brazilian mechanics and technicians be trained in American methods and standards.

Patterned After Miami School—Mr. Riddle was selected to guide establishment of this first school and direction of its training along lines followed in the Besby-Riddle School in Miami, where close contact already had been formed

with South American countries. Instructors were chosen and trained in Miami while construction of the school was under way in Sao Paulo. First students entered in November of last year and the first class was graduated from a school now run by 150 American instructors in August of this year.

More Instructors Trained—Additional instructors still are being trained in Miami for the South American work, which has become so important that Mr. Riddle said he has interest in the Besby-Riddle school to organize a new company expressly formed to handle the details of technical schools in South American countries. This is the J. P. Riddle Co., which has headquarters in Miami.

The school is considered in Washington to be only the first step in helping South American countries in the building of air service patterns. They forecast that other such schools will be necessary, that pilot training programs will have to be started and that instruction of South American students in air traffic control, airport management, surveying operations, radio construction and operation and other phases of commercial aviation will be extended in cooperation with these countries through aviation missions.

Green Light TO A THOUSAND PLANES

Flight 232, the first scheduled flight from Miami to Havana, Cuba, is scheduled for November 10, 1944.

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Not much difference from the old planes come into the major airports right now, is it?

But concerns the traffic will be greater than ever. More traffic in the air will require accurate ground and aerial traffic control, to coordinate instructions from ground to the ground.

That is a job for Federal. Here, too, one company research and manufacturing organization is critical to the know-how to design and manufacture complete air-traffic control systems.

Federal Aerial Navigation Equipment is even now guiding air traffic from takeoff to landing. And our developments are being improved and tested to increase aerial safety.

—to give a green light to a thousand planes, as they come and go.

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Federal Telephone and Radio Corporation



Newark, N. J.

THE AIR WAR

COMMENTARY

Jap Inner Defenses Softened For Next Allied Penetration

Improved Nipponese warplanes ready to meet advancing U.S. forces; American technical advantage less than year ago.

The next few weeks will see some solid advances from the outer periphery toward Japan's inner engine line—Japan's Formosa-Luzon and the Bonin Islands. MacArthur's men with Keisinger's flyers and Kornef's 5th Fleet will start their southward tap to Mindanao, while Spessard's 5th Fleet and Halsey's 3rd will move in from the Central Pacific. Japanese air power has all but collapsed in New Guinea and the Philippines, in the Marshall and eastern Caroline, and is rapidly deteriorating in the western Caroline and southern Philippines, as evidenced by recent Naval task force and 51st Air Force attacks on Yap, Palau and adjacent areas, and almost unopposed 5th Air Force attacks on Mindanao.

Her carrier-based aviation has been practically wiped out, the main force having been delivered by the ubiquitous Task Force 58 in the furious battle of the eastern Philippine waters last June. However, Japanese air power in the heavily equipped base in Luzon, Formosa and the islands of Japan proper may be expected to put up a tough fight. Pilot losses have been serious, but the aircraft have been technically improved.

Plane of Inner Command.—Many of the early models with which the Jap Army and Navy pilots were equipped have disappeared from the scene. These include such fighters as the Claude (Navy Type 92), Kate (Army Type 97) and Zeke Mk. 1 (the original Zeke), such medium bombers as Nell (Army Type 96) and Sally (Army Type 97), the torpedo bomber Kate (Army Type 97) and dive bomber Vel (Navy Type 89). Based on the Japanese calendar (1936 to 2000) these type numbers indicate that these aircraft were placed in service between 1936 (type 96) and 1940 (type 00).

Engines used were copies of Pratt & Whitney radial air-cooled engines such as the Hoken and Katobuki (8-cylinder 658 to 900 hp.) and early models of the Kinmen and Sakae (14-cylinder, two-row, 1546 to 1660 hp.). As is well known, these planes featured the lightest possible construction, with a minimum of equipment for the pilots. Armor protection and self-sealing fuel tanks was regarded as just as much excess weight, and a high percentage of magnesium contributed to make these early models flying coffins for Jap aviators. Fire-power was also light. 7.7 mm. (30 cal.) guns being standard equipment.

New Fighters.—During 1942-43 Zeke Mk. 2 and a clipped-wing version nicknamed Hans were equipped with Sakae 34 engines of 1,125 hp. and greatly improved 36 mm. cannon, but still no armor or self-sealing fuel tanks. These features first appeared on the Army fighter Oscar Mk. 2 in rather crude form, with improvements found in the later service model in the still newer Army fighters, Type (Type 2) and Tony (Type 3). Type 2 is powered by a Nakazuki Type 2 radial engine of 1,400 hp., and Tony by a Kawasaki 14-cylinder liquid-cooled inverted V engine, similar to the German Daimler-Benz 601, with injection pump of Japanese design.

These two fighters roughly correspond to the German Focke-Wulf 190 and Messerschmitt 109, and are highly respected by our Navy and Army Air Force pilots. Latest Type 2 armament consists of six 12.7 mm. (50 cal.) machine guns, and a 20 mm. cannon, and a 4-bladed propeller has been reported. All these fighters are also used as fighter-bombers, carrying bombs under the wings, or plywood-type jet-assisted fuel tanks which require as long range fighters. A formidable two-en-

gine ground attack and night fighter is known as Mark (Type 2) and is armed with 12.7 mm. guns and one 37 mm. cannon. Type 2 (short for 92, Japanese year 2002) means put into service in 1942.

Better Bombers.—The early Navy medium bomber Nell has been largely replaced by Betty (Navy, Type 1), an airplane in the same class as our B-26 and B-24, although not so rugged nor so heavily armed as the latest models of these hard-hitting American bombers. Army's Sally Mk. 3 is replacing earlier models, and a few Army bomber in the same class as Holes.

An early Army light bomber named Lily (Type 99) is being replaced by Mk. 2, with heavier armament and fire power. Up to recent months it was not known for certain if the Japanese had any 4-engine heavy bombers in operational use, apart from the flying boats Mitsui and the newer Koshi. The existence of a land-based heavy bomber has now been confirmed, but no details as to size and performance are yet reliable.

Further Improvements.—Recent reports indicate the use of heavier armor plate, bullet-proof glass, better quality self-sealing fuel tanks and improved oxygen equipment. All this spells increased concern for the Jap pilots. Engines up to 1,900 hp. and more are being installed, some with extremely ingenious booster devices including water injection. An 18-cylinder radial engine of well over 2,000 hp. has been developed and may appear in new or improved fighters and bombers early in 1945.

Radio gadgets have been improved and the use of radar has been confirmed. New type targets and electrically controlled guns have been added. There seems to be considerable evidence to substantiate Secretary Forrestal's recent statement that, although U.S. Navy planes have been improved, we do not now have as great technical advantages over the enemy as we year ago.

Those Old-sounding Code Names.—It may be of interest to trace the origin and usefulness of the colorful code names for the various types of Japanese aircraft, and the subject of a forthcoming article. The whole system is now being revised by the newly organized Technical Air Intelligence Center, Anacostia, Washington, D. C., under a combined Army, Navy, British arrangement. —NAVIGATOR



PROVEN IN WAR — FOR PEACETIME PERFORMANCE

In war the Curtiss Commando has established itself as a major instrument of transportation. It has landed personnel and supplies of all types wherever the need has been critical—often under most unfavorable flying conditions.

Evolved from an airline design, the Commando will be available for commercial

operation as soon as the strategy of war permits. Its conversion into a luxury airliner or a cargo carrier will be speedy. This will help to bridge the gap between war and peace by providing jobs for the men and women who build and operate these transport airplanes. Look to the Sky, America!

Curtiss-Wright Corporation, Airplane Division.

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PERSONNEL



Joseph E. Lowe, Jr., (photo), director of public relations for Fairchild Engine and Airplane Corp., Dayton, Ohio, has been named chairman of the U. S. Army Signal Corps production field office in San Francisco. He will be succeeded by **R. E. MacDonald**, presently appointed chairman of the division.

Yale Alford Fund, Lowe is vice-president of the Airplane division, Curtiss-Wright Corp., to succeed C. S. Matthes, recently re-



Bruce F. Boreley (photo) has been named city traffic manager for Lockheed Aircraft Corp., which will facilitate handling the increasing volume of air passengers originating there and to prepare for the additional growth expected by the company. **Walter H. Nelson** will be ticket agent. He was formerly ticket agent in Western Airlines, Los Angeles city ticket office.

Donald H. Fulton has been appointed sales promotion manager and coordinator of all sales promotion activities for York Research Corp., New York. The expansion of this organization during the last year into electronics, plastics, technical materials, industrial engineering, internal combustion engine design and aircraft planning, has resulted in a considerable expansion of promotion functions of the company. Fulton has been with Glenn L. Martin Co. and Hughes Aircraft Co.

David J. Bonawit is the new chief engineer of Marshall-Rohrer division of Bendix Aviation Corp., to direct engineering progress in the company's laboratories. Bonawit has 22 years' experience in research, development and production of frictional materials for brakes and clutches. **H. L. Rosenbaum**, former vice-president of George W. Borg Corp., of Chicago, has been appointed district manager for the Central metropolitan district for the radio division of Bendix Aviation

Corp., with headquarters in Chicago.

Jack C. Wilson, former senior administrative officer of the U. S. Army Signal Corps production field office in San Francisco, has been appointed Pacific district manager for the radio division of Bendix Aviation Corp. He will be stationed in San Francisco.

R. E. Lyons becomes director of industrial relations for the Airplane division, Curtiss-Wright Corp., to succeed C. S. Matthes, recently re-



Lyons signed after nearly 30 years with Curtiss-Wright. Lyons has been assistant to the general manager of the Columbia Airplane division plant. **George A. Sandgren**, administrative assistant to the Columbia factory manager, has replaced Lyons at Columbia.



George Steven Roper, chief air transport section, aviation division, Department of State, is giving a course on air transportation at a School of Foreign Service at Georgetown University during the coming term. The course will be divided into four main sections, from the early historical developments in the field of aviation. From 1928 to 1948 Roper was with the International Division of CAA.

Col. Harry C. Short has been named manager of Continental Air Lines modification center in Denver, replacing Stanley E. Skala, who has returned to Continental as vice-president in charge of maintenance and engineering. Short will assume direction of the center after being placed on inactive status with the AAF. He has been commanding of-

ficer at the 318th sub-depot, Maxwell Field, West Palm Beach, Fla.

Kenneth B. Riley, assistant passenger manager of American Export Airlines for the past two years, returns



Riley **Muller**

to American Export Lines (ownership) on Oct. 2. Riley is a specialist in governmental procedure pertaining to customs and passport and has been on leave from the shipboard company to the airline. He will be replaced by **William E. Muller**, former passenger representative for American Export Airlines. Muller has been associated with commercial air transportation for over 20 years.

John E. Boyce, former executive adviser to the vice-president and general manager of Lockheed Aircraft Corp., and chairman of the company's contract termination committee, has been appointed director of readjustment services of the Aeronautical Chamber of Commerce. Boyce will supervise the preparation of analysis, reports and recommendations on contract termination, renegotiation, surplus disposal, financial development and related industry problems in addition he will direct the industry coordination and government liaison with respect to these matters.

Russell F. Baugher, of the engineering staff of Lester-Kaufmann Aircraft Corp., St. Louis, Mo., recently was elected director of the Plans division of the Society of Aeronautical Weight Engineers. Baugher is chief of weight engineers at the Lester-Kaufmann plant.



Thomas Bartlett has joined the staff of Lawrence Aeronautical Corp., at Linden, N. J., as operations manager. Bartlett has been associated with Curtiss-Wright Aircraft Corp., at Buffalo, since 1928. He held various positions in the department of general supervision and planning and manufacturing while at Curtiss-Wright.

Firestone

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Of Course YOUR NEW PLANE WILL BE SAFE IN THE AIR *But* **HOW ABOUT ON THE GROUND?**

TOMORROW'S passenger and cargo planes will fly the skyways of the world. They will touch their wheels upon the soil of many countries. But not every airport will be as smooth or as safe as La Guardia or Croydon or Le Bourget. Many emergency fields will be little better than clearings, often small and covered with mud. And tomorrow's planes must be able to land and take off safely on the WORST of these fields as well as on the best of them.

That is why so many aircraft designers have their eyes on the Channel Tread Airplane Tire, developed and pioneered by Firestone. They know that this remarkable tire gives maximum flotation and superior traction on wet and muddy fields and permits quicker braking on landing. They know it has been tried and proved on combat planes operating out of all kinds of fields during the war and that it is famous for long life and dependability.

Would you like full information about Firestone Channel Tread Tires for your postwar planes and plans? A letter, wire or phone call will bring a trained Firestone aircraft engineer without obligation.

Shown in the shape of Firestone with Channel Tread, and the Firestone Channel Tread tire was under the direction of Howard E. H. C.



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New Flight Instrument guards against fuel waste!



M.L.T. SPERRY DETONATION INDICATOR INSURES FUEL ECONOMY... LONGER ENGINE LIFE... GREATER SAFETY



1. THE ENGINEER on this airplane may be deceiving, but the pilot has no way of knowing. Detonation means destructive combustion. In your case, you can hear detonation. In your aircraft, this noise level is too high.



4. REMARKABLE savings in fuel! Preference tests show savings of 10% or more over typical surface piston. Prolonged use will add safety as improved engine life prolonged periods between overhaul, lengthened.



2. DETONATION increases internal temperature and pressure tremendously. If continued, it damages engines, may cause failure. How is it possible to tell when detonation occurs in flight?



3. THE M.L.T. Sperry Detonation Indicator detects detonation instantly. A flashing light on the instrument panel warns pilot to change fuel mixture. Result? Greatest operating efficiency without damage to engine.



6. A SPERRY Automatic Mixture Control may be used in conjunction with the Detonation Indicator. When detonation occurs, this device will, actually and automatically, increase this condition and burns as long a mixture as possible without sacrifice of power.

The Detonation Indicator is designed for use on all types of engines and aircraft. Where economy of operation is important... as it will be in personal commercial aviation... this new flight instrument will stand conditions posed against useful conditions.



Patented Wright Detonation Indicator

5. THE M.L.T. Sperry Detonation Indicator is installed externally—no need for pictures of cylinders. Visual signal given instant warning of detonation. Audible switch then detonation in which cylinder combustion actually.

Sperry Gyroscope Company

Great Neck, New York

Division of the Sperry Corporation

GYROSCOPES • ELECTRONICS • AUTOMATIC COMPUTATION • SERVO-MECHANISMS

Garwood Manufacturing, member of a National Association of Manufacturers "Modern Pioneer Award" and head of the Lavacore Consulting Section of RCA Laboratories industry service dremers, has been appointed head of the Lane, Inc. Radio Laboratories.

John Foster Dickson, recently discharged from the Army Air Forces, has joined the Perryman-Central Airlines traffic staff, and it is to be assigned to Youngstown, Ohio.

Niels L. Gallagher has been named Boston station manager for United Air Lines, in anticipation of direct service into New England. Gal-



Edell Gallagher

lagher has been with United since 1932. George Edell has been appointed supervisor of ship service procedures for United. Civil records by his assisted. United's director of military operations officials in studying cargo problems and standardizing handling procedures at all United stations.

Howard K. Morgan has been named director of engineering for Transcontinental & Western Air, Inc. He has been superintendent of communications for the airline since 1938. In his new position he will have charge of all engineering activities, including planning, development, engineering, design, construction and operations engineering, under the general supervision of J. C. Franklin, vice-president of T. & W. A. Morgan has been with the airline since 1938.

Ernest F. Workman has been named administrative to coordinate all activities connected with the employment of returning veterans of the U. S. Coast Guard.

Robert H. Helmer, assistant editor of the Cincinnati Enquirer, has been named central regional manager of Transcontinental & Western Air, Inc.'s new bureau with headquarters in Chicago. Helmer is chairman of the aviation committee of the Cincinnati Chamber of Commerce and is a member of the aviation committee of the local chamber.



BOEING HONORS EMPLOYEES:

The ranks of Boeing 20-year employees were notified by four last week when P. G. Johnson, Boeing Aircraft Company president (second from left), and H. A. Reas, Boeing operations manager (left), awarded 20-year service pins to four men who have gained the two-decade mark with the company at Seattle. Mr. Johnson is shown congratulating Walter Higgins, who works in the wing structures shop. The other three Boeing old-timers are, from left, Joseph Severi, employed in automotive engineering; Harry Christensen, of the wood shop; and Walter Demasick, plant protection department. The Boeing Company, which was founded 20 years ago, now has 75 employees who are 20-year veterans, 12 of which having passed the 25-year service mark.

lei of executive. He was co-founder of the Greater Coast-to-Coast Forum and a charter member of the Coast-to-Coast Club, an organization of sportsmen.

George O. Stoyman has been promoted to city traffic manager for Delta Air Lines for Cincinnati.

TELLING THE WORLD

• Fairchild Camera and Instrument Corp., New York, has been assigned an "approved quality control" rating by the Army Air Forces. Assignment of this rating is because Fairchild has demonstrated its own inspection organization can be entrusted with full responsibility to meet Army requirements and duplication of inspection during field fabrication by AAF personnel will be eliminated.

• United Air Lines has started a campaign of 1,000-line and 400-line advertisements in Boston, Worcester, Springfield and Hartford newspapers. The campaign is being run following award of a new route into the Boston area.

• Utilizing 100 newspapers in the east, Eastern Air Lines opened the largest constant newspaper drive in its history. The campaign calls for 400-line mentions each week and introduces the "Eastern Air Lines Explorer." It is an enlargement of last fall's "All Year Service" campaign. The agency is Campbell-Bowles Co., Inc.

• Advertising agencies, artists, cartoonists, and aviation writers who can aircraft drawings in art work or layouts will get valuable help from the 24-page booklet, "Circus

Aircraft in Color and Commerce," issued by Curtiss-Wright Corp. The booklet provides a key for ordering prints of 100-odd photographs of 12 aircraft types, as well as contact sheet.

• Appointment of Eugene A. Raven as assistant director of advertising in charge of agency and direct mail activities for United Air Lines has been announced.



• A private pilot license, with 400 hours of ground school instruction and 100 hours flying time.

• "A Forum of the Future," has been issued by Pan American Airways. The booklet contains a series of announcements in aviation and aviation magazines by Pan American from August, 1943, through April, 1944.

• AERODACTYL, a monthly newsletter, is being published by the Chile under direction of Lorenzo Rodondo.

• Highlights of the Air, a new review of fact and opinion on the importance of radio in aviation, for distribution in the aviation industry, has just been issued by Radio Receiver Co., Inc., New York. The initial issue contains an article on the Army Airways Communications System by Lt. Col. Walter W. Fowell, Jr., Army and Great Pacific of the Future, by W. A. M. Hadden and Radio in Aviation, by Charles J. Standen. Highlights of the Air will be published at intervals for free distribution.



'bolt from the blue

Sweeping down out of the heavens, this "Thunderbolt" makes a leather-light landing because the shock is effectively absorbed by Aerols.

The Republic P-47 "Thunderbolt" is only one of many present-day military aircraft that are Aerol equipped. After victory, in tomorrow's age of flight, peacetime planes will also rely on Aerols for safe, smooth landings and swift, sure take-offs.

THE CLEVELAND PNEUMATIC TOOL CO.
AIRCRAFT DIVISION - CLEVELAND 15, OHIO
After Manufacturers of Close proximity tools, the Air shock absorbers for vehicles and Cleveland shock drills for mining and construction.

Buy U.S. War Bonds and Stamps

AIRCRAFT PRODUCTION

Visual Control Board Speeds Wright War Contract Conversions

System is substituted for former practice of handling mass of paper work and completes procedure in fraction of former time; see request \$10,000,000 termination completed in 90 days.

Large-scale conversion of war contracts has been streamlined and speeded at the Cincinnati plant of Wright Aeronautical Corp. by an ingenious procedure which substitutes a visual control board for the former system of reviewing a mass of paper work to determine the status of a termination.

Problems involved will have to be faced increasingly by industry within the next few months and many contracts, especially terminated, are simply replaced by another contract to fit the changing military needs for different types of equipment.

Time-Saver—Officials at Wright are planning to expedite terminations in a fraction of the usual time through the use of control boards. Wright at Cincinnati is meeting a predetermined schedule which has been planned to complete a \$10,000,000 termination within 90 days. As an example of the time-saving involved, one large company reported recently with satisfaction its termination of \$17,000,000 in contracts in two weeks.

A recent termination at Wright involving almost \$10,000,000 has been scheduled for completion within 90 days. At the end of 40 days, the Cincinnati plant is up to schedule on this termination.

Visual Control Boards—Wright's system, which it is offering to place at the disposal of other manufacturers, has in the use of visual control boards of the type widely used in scheduling production. The termination routine itself is unchanged but the feature that speeds the job is the method of scheduling the various steps involved in a termination and in keeping a check of the progress made.

Ordinarily this is done by means of forms and ledgers, the ledgers being reviewed from time to time. One weakness of the procedure, too, was that it failed to furnish

an accurate over-all picture at any given moment. Wide reviews were being posted in ledgers, changes in the status of dealings with half a dozen vendors might take place, so that the revised postings were obsolete before it was even finished. Constant re-checking was necessary to avoid needless follow-up with vendors.

Board Set Up—A member of Wright's Contract Termination Division had the idea that the visual control boards in the company's production department might be applied. A trial board was obtained to study its adaptability. After a few experiments, the visual board compared with the form and ledger method was simplicity itself.

When a contract termination notice is received, a schedule is established for the terminations after conference with the heads of the affected departments. This schedule indicates the date when each of the seven major steps of the

termination procedure should be completed. Each of these operations is represented on the control board by a different colored vertical line.

Progress Plotted—Each horizontal line on the board represents a received purchase order resulting from a termination. The progress of each canceled order through each step of procedure is plotted on the board as the action takes place. These postings are made by inserting a peg, of the same color as the corresponding vertical line, on the actual date when the operation was accomplished. The white horizontal progress line is then extended to meet the colored vertical line representing that step in the procedure.

The outstanding vertical line on the board is the current date line which is moved one space toward the final goal each day. As this date line approaches the vertical schedule lines, it is possible to plot the next action to be taken. As the date line meets the various schedule lines, it is perceptible at a glance, by comparison with the horizontal progress lines, exactly which vendor cancellations may be running behind schedule. Through this system effort is directed toward keeping the progress lines up to or ahead of the moving date line at all times.

The control boards developed by Wright make it possible to see at a glance the present status of the termination in the case of all vendors involved, waste is eliminated, every step is made to count.



Control-Wright Termination Board: Bruce Jones, left, manager of contract termination at the Cincinnati plant of Wright Aeronautical Corp., explains the visual control board process to Paul Rest, of the factory records section.



KEEPING ENGINE TEMPERATURE JUST RIGHT ... at sea level or 30,000 feet up

If you have a problem involving the use of a bellows assembly for accurate temperature control, this application of Hydron bellows and the engineering behind it offer evidence that Clifford can help you.

The problem here was to adapt a British aircraft engine by-pass thermostat to American production techniques and practices. Its purpose is to provide for speedy engine warm-up and accurate control of engine operating temperature regardless of altitude.

Clifford produces this thermostat as shown in the cross-sectional drawing above... incorporating three Hydron bellows: a large thermostatic bellows, a large altitude compensator bellows and a small automatic safety bellows. The compensating factor assures most efficient operation at sea level or 30,000 feet up. In making the complete assembly, Clifford fills and tests it to meet exacting specifications... and it's living up to these specifications in many an aerial combat zone.



FOR BELLOW FACTS COME TO CLIFFORD FIRST

There's no secret about how Clifford meets the most rapid requirements. Having produced industry's first hydraulically formed bellows—Hydron, Clifford is still just with the facts about these uniform, protected metal bellows. With an engineering staff of bellow specialists, Clifford is equipped to save you time, trouble and expense in your current or past-engine applications of bellows. Write now—before you start design—for a copy of our facts.

Fill in and mail the coupon below—today.

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Please send me a free copy of your 44-page Hydron Bellows Data Book. I am interested in the applications shown.

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| <input type="checkbox"/> Air conditioning systems | <input type="checkbox"/> Oil bearing systems |
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| <input type="checkbox"/> Engine thermostats | <input type="checkbox"/> Pressure gauges |
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| <input type="checkbox"/> Hot water heaters | <input type="checkbox"/> Steam & waste—commercial |
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| <input type="checkbox"/> Machine and plant control of temperature and pressure | <input type="checkbox"/> Steam-heating controls |

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CLIFFORD First with the Facts on Hydraulically-formed Bellows HYDRON



Featherweight—the First All-Aluminum Aircraft Oil Control and Control System. Made with Hydron Tubing—Bored by Clifford's Patented Method.



B-29 Uses Strong Aluminum Alloy

Reynolds product on outer wing skins is reported as strong as structural steel but only one-third as heavy.

Disclosure that the top center wing skins for Boeing's B-29 are being prefabricated by Reynolds Metals Co. from their B-340 super-strong aluminum alloy, reported as strong as structural steel but only one-third as heavy, develops the possibility that it may be used for other parts of the bomber.

For the last year Reynolds has provided finished aluminum sheet, strip, rivets, bar, extrusions, tubing, forgings, wire, washers, fast and finished parts for the Superfortress. Machinery has been set up to prefabricate other parts for the same plane such as leading edge skins, leading edge formers, trailing edge ribs and doublers, wing and fuselage skins, in-spar ribs webs, needle firing skins and bulkheads.

Weight-Saver—J. F. Van Kemmer, Reynolds' B-29 project manager, says the use of B-340 in the construction of these additional parts could cut hundreds of pounds from the weight of the B-29.

Reynolds is supplying material for these planes at its three plants in Seattle, Renton and Wichita, to the Bell plant at Marietta and the Glenn L. Martin plant at Omaha, the five prime contractors to the Superfortress as well as to Hudson Motor Car, Chrysler.



ASSEMBLES INJECTION CARBURETOR IN BENDIX TEST. Guided only by manuals and "explosion views" 11-year-old Jack Butler, of Chicago, assembled the \$60-odd parts of an aircraft injection carburetor in approximately 90 minutes in a demonstration held at the Illinois division of Bendix Aviation Corp. He is a voluntary assembly "guzzler" to test effectiveness of photographic exploded views, visual training aids used to prevent poor work and making in war production and Army service manuals.

Murray Body, Fisher Body and Martin's Baltimore plant and many smaller subcontractors.

Plant Sets Record On B-29 Engines

Further evidence of emphasis being placed on output of Boeing's B-29 Superfortress is seen in the Curtiss-Wright report that its Wood-Ridge plant, which builds Cyclone 18's for the B-29, topped all previous production records last month.

Output of the 2,900 hp. engines, largest in use on any warplane, has been climbing steadily at Wood-Ridge in recent months. Number produced was not disclosed, but the company said the month's production had risen to the next highest level.

Resilience—Contract payments for less powerful types of Cyclone engines will result in decreased activity at the company's Patterson mesa plants, production at Wood-Ridge will continue at full speed with increased schedules and with higher schedules for spares as the B-29's top up their operations over Japan. It is expected that Patterson mesa plants will take part in the production of parts for the 18's as the output of Cyclone 9's and 14's is reduced.

Study Plane Manhours

Aircraft War Production Council, West Coast, reports engineering time required following the first flight of a new model warplane as much greater than that required for the original design, due to modifications ordered during the operational life of the airplane.

Survey Made—The survey shows that 140,273 engineering manhours were required for the original design of a typical fighter, and an additional 1,317,336 engineering manhours went into subsequent modifications. Comparable manhour figures for engineering a typical bomber are 414,812 and 2,563,553.

Plywood Agency

U. S. Mangel Plywood, Inc., recently-owned subsidiary of The Mangel Co., and United States Plywood Corp., has opened a plywood distributing unit in Atlanta, the third in a planned plywood warehouse chain, others being at Jacksonville, Fla., and Louisville, Ky. J. P. Burford, formerly The Mangel Co.'s southern sales representative, will manage the Atlanta warehouse and also supervise the Jacksonville operation. The Atlanta unit will serve the state of Georgia and parts of Tennessee, Alabama and Florida.

Newest Mitchell Has 8-Gun Nose

Latest version of B-25 seen now high in plane firepower with eighteen .50 caliber machine guns.

North American is now making three noses for its B-25 Mitchell bomber, the newest with eight guns which boost firepower to eighteen .50 caliber machine guns. Already the most heavily armed plane, the latest version of the B-25 sets new high for concentrated destructive power. The new version is being built at North American's Kansas plant, which is producing two versions of the same bomber from the same production line.

Attack Model—One is the attack model with its eight-gun nose while the other is the conventional bomber model with the transparent enclosure for the bombardier. At its California plant, North American is making the model which carries a 75 mm cannon and four .50 caliber machine guns in the nose.

All B-25's are turned off the assembly line with bombardier nose, but this is made up with other nose installations which can be changed near-flight.

The new eight-gun nose gives the bomber 14 forward-firing machine guns, including the gun in the upper power turret. Besides the eight in the nose, the plane has four in blisters on each side of the



TEST NEW DESIGN PROPELLER:

In front of Aeroproducts' new flight test hangar at Dayton municipal airport, Test Pilot Pete Thomas briefs a test flight for his crew preparatory to take-off in the government-owned AT-11 advanced trainer warming up on the apron. The trainer has been lent to Aeroproducts for test on two-blade full-feathering propellers of a new design, capable of a complete feathering operation in two seconds.

fuselage. All 12 of the fixed guns are fired by the pilot.

Bombs Also Carried—In addition to the 12 fixed forward-firing guns and two upper-turret guns, the Mitchell has four more turrets, two in the power tail turret and two in the waist.

A full load of bombs is carried in the two versions not equipped with cannon, but in the eight-gun nose model, the bombardier's controls are placed so that the bombs can be released by the pilot.

This arrangement was first installed in a recent version of the B-25 which carried a 75 mm cannon in addition to the four turrets in the nose.

Helldiver Uses New Cannons on Japs

Navy has permitted disclosure that the first cannon-firing warplane built for aircraft carriers, the new version of the Curtiss SB2C Helldiver, is now in action against the Japs.

It has a pair of 36 mm fixed cannons, mounted on the leading edge of the wing, in place of former armament of .50 caliber machine guns. This is in addition to the flexible machine guns operated by the rear gunner and radio-man.

Used as Ground Targets—The dive-bombers of Air Group One have been so well protected by their fighters they never had a

chance to use the cannon against a Jap plane in the air, but they have strafed water and land targets.

Fighting One of this Group, a combination of the oldest fighting squadrons in the Navy, is still called the "High Hailers," a name adopted in 1927 and well known to many for their acrobatic exhibitions.

New St. Paul Plant

Northwestern Aeronautical Corp., one of the largest producers of gliders, has established a new plant in St. Paul for fabrication and production of metal aircraft parts and the new plant already has begun work.

In establishing the plant, which is making jetsons fuel tanks for Army planes, Northwestern suspended the production from its glider plants in the Twin Cities.

Glider output is tapering off and is expected to be cut sharply by spring.

Plastics Directory

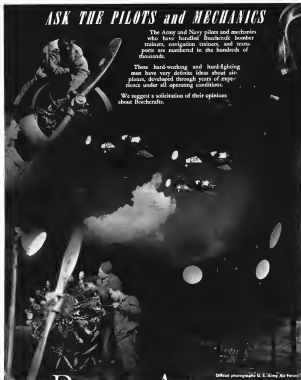
A new directory of plastics, molders, laminators, fabricators and consultants in the states of Washington, Oregon and California, has been published by the Pacific Coast section of the Society of the Plastics Industry, and copies may be obtained from the secretary, Robert A. Cooper, 2146 South Vermont Ave., Los Angeles 7.

ASK THE PILOTS and MECHANICS

The Army and Navy pilots and mechanics who have handled Borchardt bomber trainers, courier planes, and transport are numbered in the hundreds of thousands.

These hard-working and hard-fighting men have very definite ideas about airplanes, developed through years of experience under all operating conditions.

We suggest a solicitation of their opinions about Borchardt.



Official photograph U. S. Army Air Force

Beech Aircraft

CORPORATION

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Shipping Firms Present Case For Coordinated Air-Sea Service

House Merchant Marine Committee hearings develop into comprehensive review of country's post-war international air transport policy and prospects.

The House Merchant Marine Committee opened hearings last week to give shipping interests opportunity to plead their case for "coordinated air-sea" service, and by week end had swung into a full-fledged review of America's post-war international air transport prospects.

These hearings contrasted with those thus far conducted by the aviation subcommittee of the Senate Commerce Committee. They were open to the public. Every session was jammed and was characterized by opposition to a chosen instrument. The Senate group, on the other hand, has held closed hearings for about a year, reportedly without placing witnesses under oath, and has appeared ready on several occasions to come out for a chosen instrument, although the bulk of testimony placed before it has been opposed to the monopoly concept.

Full Letter Put in Record.—Most significant development in the House group was the placing in its record of the now-famous Hall letter to the Senate Committee, in which the Secretary of State took issue with chosen instrument arguments. The House Committee counsel, Irving G. McCona, read portions of the letter in the presence of Assistant Secretary of State Adolph Berle, Jr., then as the stand, Civil Aeronautics Board Chairman L. Welch Pogue, Board Members Oswald Ryan and Josh Lee, and a host of shipping company representatives.

On the monopoly versus competition issue, Berle, making the standard statement that the matter is one for Congress to decide, told the present law is "not a chosen instrument act" and until Congress changes it, the State Department will assume there is to be competition on foreign routes. He continued, following the lead of the Hall letter, that the Department

intends to do the negotiating for landing rights. Berle said that in the pioneer days of aviation it was well for Pan American to make its own arrangements, of which he said there had been 99 other temporary or permanent. But international interest now demands government supervision.

Questioned on PAA Agreements.—McCona asked Berle whether Pan American agreements had "handcuffed" the war effort; the witness was unwilling to agree, but specified that many of them "decided to be revised in the light of war effort, notably in South America."

Berle added that some of Pan American's early negotiations had left foreign governments with the impression that requested rights would be available in the United States. In this category



Plods for Air Service.—Alfred E. Roth, president of the National Federation of American Shippers, as he appeared to the House Merchant Marine Committee for steamship company participation in overseas aviation

he especially named Brazil and New Zealand.

The main point with respect to future landing arrangements was that this government is opposed unreservedly to exclusive rights, or a "harmful" or "undesirable" British. Berle, he thought, would be the scheme proposed by America and generally accepted already by leading nations by which bi-lateral commercial agreements would be negotiated and their provisions generalized to apply to any other nations seeking rights in the same areas.

Congress' Problem.—Berle sees the air-sea question, like the chosen instrument, as one for Congress to settle, but he stressed a distinction in that shipping services stop at coastal points whereas airlines know no geographical boundaries.

He also corrected a point much in dispute, viz, England's intention with regard to integrated air-sea services. Although British shipping companies have amended their charters to permit operation of aircraft, the government by no means has decided whether it will abandon the monopoly of subsidy now held by BOAC.

Committees agreed with shipping interests and the Maritime Commission that the CAB had interpreted incorrectly that section of the Civil Aeronautics Act which concerns the right of one type of transportation to engage in another.

Court Settlement Urged.—Pogue denied, however, that any automatic denial had ever been rendered a shipping company's application for air services and expressed hope the matter could be settled in the courts. In the meantime, according to CAB interpretation of the Act, surface carriers must show that aircraft will be "used to the public advantage." Pogue described this as "an additional qualification which the steamship lines must meet." The President is the "final arbiter" in such matters at present and his opinion is not subject to review, he pointed out.

Shipping interests plainly were opening a well-planned drive in Congress to obtain recognition for their contention that legislative policy had never opposed their aspirations to operate aircraft.

Lead First Witnesses.—First witness was Admiral Emory S. Land, Maritime Commission Chairman, followed by Alfred E. Roth, president of the National Federation

• NUMBER 12 IN A SERIES OF MESSAGES BY KELLETT AIRCRAFT CORPORATION •



THERE'S SOMETHING IN THE AIR...

THE SHADOWS of slowly descending helicopters will be a frequent sight in the postwar years to come... but only after the war will you learn all of the progress in design and the engineering improvements that have already taken place. Today's "in the air" performance of several successful helicopter types is known only to the Military Services... but in the tomorrow to come it is likely that the ability of helicopters to land and take off vertically... to fly rapidly or hover in the air... will find many commercial,

personal and industrial uses. The pouring of dense areas and canals, the inspection of construction power and pipe lines, spraying crops, servicing inaccessible places far from airports, are just a few of many useful applications of the helicopter. Kellett's expanding engineering staff looks with anticipation to the future... when modern helicopters will bring you one of the most progressive developments to come out of this war. Kellett Aircraft Corporation, Upper Merion (Philadelphia), Pa.

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

at American Shipping. Bath is said to be the record and elaborated on the Federation's declaration of policy. He was followed by individual shipping executives who sought to bolster his general arguments with details applicable to their own cases.

Land contained the shippers' companies were the only transport lines interested which commented entirely to a wartime basis, and would be handicapped seriously if prevented from utilizing aircraft after the war. Rehabilitation of shipping facilities will take so long, he said, that United States air transport companies and foreign transportation businesses otherwise might capture the traffic and markets of American shippers who generated world trade routes.

"There is urgent necessity for prompt governmental clarification of its national policy," Land said, because otherwise post-war planning is impossible.

Pan American Asks New Pacific Routes

Files for Great Circle link between Alaska and California via Kurile Islands, Tokyo, Shanghai, Canton, Hanoi and possibly point in Siberia.

Pan American Airways served notice of its plans in the Pacific area that week with an application to the Civil Aeronautics Board for war route developments.

Chief new route requested is a Great Circle link between Alaska and California via a point in the Kurile Islands, Tokyo, Shanghai, Canton, Hanoi, and possibly a point in Siberia. Pan American plans call for a junction at California with a requested extension of the line's trans-Atlantic certificate.

Alternate Route—Other extensions applied for include an alternate to Pan American's presently certificated trans-Pacific route from Wake Island to Canton via Tokyo and Shanghai, requesting the main line at Canton; permanent certificate for the new temporary route between Manila and Singapore via an extension to S. Borneo, Java, extension of the South Pacific route from Noumea to Sydney.

President Lines—A new contract for Pacific picture was American President Lines Ltd., steamship line, which asked CAB for a trans-Pacific route between Cal-

New World Stops

The Civil Aeronautics Board last week announced details of several points to its tentative pattern of international routes for U. S. carriers. An amended route is shown in red (added points in brackets).

Route IV New York-Los Angeles via Bermuda and Azores. **Route V** London-Madrid-Berkeley-Manila-Rio de Janeiro-Los Angeles.

Route VI London-Madrid-Berkeley-Manila-Rio de Janeiro-Los Angeles. **Route VII** London-Madrid-Berkeley-Manila-Rio de Janeiro-Los Angeles. **Route VIII** London-Madrid-Berkeley-Manila-Rio de Janeiro-Los Angeles.

form and California. Intermediate points include Honolulu, Midway, Tokyo, Shanghai, Hong Kong, Manila, Batavia, Singapore, Bangkok, and Rangoon.

Delta Air Corp. filed for an extension of its present route AM 34 from a Kansas City-Miami service. Northern leg of its proposed route extends from Birmingham via Tampa, Miami, Memphis, Tenn., and Springfield, Ill., to Kansas City. Mo. Southern extension would link Savannah and Miami via Brunswick, Ga., and Jacksonville, Fla.

Aero-Transportes Develops New Lines

Aero-Transportes S. A., Mexican airline, is moving forward rapidly in development of routes granted to it by the Mexican government, and observers say the line promises to become an energetic factor in competition there.

Most recent addition to services now operating is a route connecting Manila and Tampico via Guadalajara, Aguascalientes and San Luis Potosi. Connections are made at the latter point with the North-South route linking San Luis with Mexico City via Monterrey. The company also is flying between Toronto and Matamoros.

Attorneys Present Case—CAB Examiner Ferdinand D. Maron last week heard arguments. Attorneys present their case in support of the line's application for temporary 90-day permits to land

at Brownsville and Eagle Pass, Texas, pending airport improvements at Matamoros and Piedras Negras.

Work is under way at both sites at Aero-Transportes' expense. The State Department has indicated it has no objection to granting temporary landing permits, and it seems likely that CAB will so find. Reliable sources hold that in seeking the temporary permit the line is not trying for a foothold in the U. S. Application for such entry to San Antonio, Texas, is pending, and the granting of temporary landing rights will have little effect on the outcome of this request.

Calif.-Hawaii Route Allocation Likely

CAB expected to grant certification to one or possibly two carriers to compete with PAA.

As the Civil Aeronautics Board's hearing on applications for routes between the West Coast and Hawaii drew to a close last week, it seemed almost certain that at least one and possibly two new carriers would be certificated to compete with Pan American Airways over the route.

Five of the six applicants have presented traffic estimates which generally agree that roughly 190,000 passengers will travel between California and Hawaii in the first year of air operations. Net all will be served by plane, but the average estimated air traffic figure shown in the table below is many times greater than the number of pre-war passengers carried by Pan American.

Following are estimates of one-way passenger tonnage to Honolulu and beyond. (Round trips counted twice) first year of proposed operation.

	Now passengers	Total air passengers	Estimated to be carried by applicant
Midwest	11,000	22,000	21,461
Atlantic	19,200	38,400	23,180
Texas	10,500	21,000	20,460
Western	10,000	20,000	12,701
Alaska	10,300	20,600	3,997
Average	11,600	23,200	18,220

(Table inserted in record as part of testimony of H. C. Foxworth, an economist of Northwest Airlines.)

This estimated traffic contrasts sharply with those on passengers which a proposed Seattle-Honolulu route would develop. Here, last week, Northwest Airlines attorneys present their case in support of the line's application for temporary 90-day permits to land

only applicant seeking both routes. Madison's estimate recorded in the table above shows expected traffic on both the Seattle-Honolulu and California-Hawaii routes.

Seattle Certificate Unlikely—From these figures, qualified observers are in general agreement that, despite prospects for future development of the Pacific Northwest, it does not seem likely CAB will certify a carrier at present as the Seattle-Honolulu route.

On the other hand, the bright outlook for midwest-Hawaii traffic indicates Pan American may expect competition from one and possibly two additional carriers.

Airlines Face Fight For Trade—Gorrell

ATA president says public patronage and competition will decide aviation's place in post-war transport picture.

Views of Col. Edgar S. Gorrell on aviation's place in post-war U. S. foreign commerce and travel are cautious and realistic when he says "the place of air transport will be determined by the character of its service will be determined by public patronage and the interplay of competitive forces." What that place will be, he will not prophesy.

Gorrell is president of the Air Transport Association, but the opinions he expressed recently before the National Post-War Conference at Spring Lake, N. J., were his own, and indicate he has had cognizance of the challenges facing the airlines after the war. Aviation will accord a new alternative service to the traveling and shipping public. That public will weigh advantages and disadvantages of that and older forms of transport. Those responsible for air transport's development will try their best to increase their advantages and reduce the advantages of other services, but the latter may be expected to do the same. Thus "mazy years" will elapse before the true place of air transport is determined.

Test of Time—What happens in the meantime? "Confident prophecy is out of the question" because of the war. The future will not necessarily duplicate pre-war patterns, but that past transportation experience can be a reference point for consideration of future expectations. And the war has demonstrated to the traveler that "over-water flight is not a great

adventure but merely a trip by airplane from here to there," and to the shipper that international airlines afford fast, reliable service.

Two to four years immediately following the war should "transmute planes into true post-war planes, thoroughly tested, and ready to meet from the production west." It can be expected that during the conversion/rehabilitation period the American airline "company or companies" that are to operate should establish their right to do so, principles of international flight will be determined and accepted, with negotiations on the more important routes concluded, the international service pattern will be established or in operation, and American flag foreign operations will be "well on their way toward public acceptance as vital parts of the transoceanic transport system," providing good service at rates as low as or below, pre-war steamship first and second or cabin class rates.

Overseas Air Travel—Gorrell thinks it is early probability that a two-year vacation in Europe with all expenses paid and at least 15 days to spend in various European cities can be offered to U. S.

citizens at \$500 or less, with other more distant contact prearranged accordingly. There should be "large increments in overseas air travel." But he doubts that considerable arrears in the volume of ocean freight by commercial airlines can be expected. But charges for overseas cargo, as many have pointed out before, lie in upper brackets of high valued commodities.

Even a modest quantity of freight will not come to the airlines without an effort to get it and a fight from surface carriers to retain it. "The past history of transport shows that seldom does the new mode entirely supersede the older form, and that it usually depends upon the stimulation of entirely new traffic as well as upon diversion from the older normalities."

Doris Miller to AA

Miss Doris Miller, assistant press chief for the Civil Aeronautics Board, will join American Airlines the first of the month to do publicity in Washington. C. Miss Miller is well known to the air transport field, having been in the CAB press room four years.



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The above photograph shows several types and sizes of Fedders air, engine and oil cooling units.

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Airline Travel Survey Forecasts Sharp Post-War Traffic Upturn

Three-fold expansion in use of services predicted in Cowell-Collier Publishing Co. study; reasons for preferring planes to other means of travel place pleasure and comfort above speed.

First-hand indications of the sizable marketing job ahead for the commercial airlines, if post-war air transportation meets its expected growth, come to light in the Cowell-Collier Publishing Co. survey forecasting a three-fold expansion in airline travel after the war.

With 68 percent of persons interviewed planning to use commercial airlines in post-war travel, as against 33 percent who already have flown the airways, a study of reasons leading to the first airline trip gives airline travel sellers a new approach.

Speed Not Main Factor—In the past, going by air has generally been talked of in terms of speed. "It pays to fly." Some 5,000 persons interviewed, however, have different ideas. Speed accounted for only 33 percent of initial flights, but pleasure flying grows (curiosity, sightseeing, pleasure and convenience) made up 44 percent. Here is a breakdown of the replies to the question "what led you to make your first airline trip?"

	Men	Women	Total
Speed was main factor	35	30	33
Convenience	25	25	25
Pleasure—sightseeing	25	25	25
Pleasure—curiosity	10	10	10
Pleasure—pleasure	10	10	10
Convenience	10	10	10
Cost	10	10	10
Other	10	10	10
Total	100	100	100

The fact that women mentioned pleasure reasons for flying more often than men, together with the showing that 62 percent of women interviewed expect to fly commercially after the war, as compared with 68 percent for men, emphasizes the importance of the development of that market in post-war expansion. Further, it indicates the extent women's resistance to flying is disappearing.

Another important market for post-war air travel will be among the youth. This will be particularly true as travel rates decline. For example, the survey shows that youth want to fly, but do not do so as often as older persons,

whereas the latter group, while less anxious to fly, continue to use the airlines once having flown.

Table I below shows by ages the number of airline flights, with percentages based on total who have flown, while Table II breaks down by age groups the replies to the question "Do you expect to fly in commercial airline planes after the war?"

While the survey disclosed that more persons in large cities were planning to use the airlines than in smaller communities, airline officials were of the opinion that each was a natural reaction in view of the fact that only the larger cities have had adequate facilities in the past. In cities of 250,000 and over, for example, 71 percent of those interviewed expected to fly commercially after the war, while in cities under 25,000 61 percent were planning to fly.

One of the most important jobs for the air carriers will be to overcome the obstacles to airline flights. "Lack of interest" in going by air was the reason given by 23 percent of the men and 29 percent of the women who are not planning to use airline facilities in the post-war period. The next important reason was the danger involved. This was given by 13 percent of the men and 15 percent of the women.

	Men	Women	Total
Lack of interest	23	29	26
Danger involved	13	15	14
Cost too high	10	10	10
Not sure of plane	10	10	10
Not sure of airline	10	10	10
Other	10	10	10
Total	100	100	100

Age	Does	TABLE I					Total
		18-24	25-34	35-44	45-54	55 and over	
18-24	75	75	75	75	75	75	75
25-34	75	75	75	75	75	75	75
35-44	75	75	75	75	75	75	75
45-54	75	75	75	75	75	75	75
55 and over	75	75	75	75	75	75	75
Total	75	75	75	75	75	75	75

Safety Stressed

"Aviation development has been retarded by the tendency of newspapers to play up every airline accident," says Cowell-Collier Research Department's survey "Tomorrow's Customers for Aviation."

"Little has been done in advertising and publicity to keep the public equally conscious of the millions and millions of airline miles flown without incident."

"The safety and even greater dependability of airline flight today is a tremendous factor which the aviation industry can and should promote. Up to now the exception in the publicity of flight has kept the industry from adequately publicizing this accomplishment in fact."

of the women as their objection to air travel. Reasons for not expecting to use air travel are listed below.

If the airline bidding for trans-Atlantic routes can get their share as low as \$300 a round trip, 87 percent of the persons interviewed would like to go abroad after the war. Another 31 percent wouldn't go at that figure, while 3 percent don't know what they would do.

Business to South America, however, appears to be brighter, with almost three-fourths of those interviewed stating that they would like to visit that continent. However, 47 percent, as against 34 percent, would rather go by boat than by air. Twelve percent would like a combination plane and boat ride, while 1 percent think they would like to go by car. Six percent don't care how they get there.

Almost half the respondents were unable to select any particular countries in South America to visit. Brazil was picked by 38 percent, Argentina by 25 percent



TRIBUTE TO FRYE:

A model of a Douglas C-54 was presented to Jack Frye (left) by Donald W. Douglas when Frye celebrated completion of ten years as president of TWA. An accompanying card described Frye as a "modern pioneer, whose global achievements in Douglas planes have helped place Montreal on the path of aviation progress." Mayor John B. Gage of Kansas City (right) is presenting Douglas tribute as E. Lee Talbot, TWA executive vice-president, watches.

TAC Route May Link U.S. Northwest, N.Y.

Canadian firm's plan for direct Winnipeg-Toronto has eyed as bid for new service to East Coast.

Plans of Trans-Canada Air Lines for a direct Winnipeg-Toronto service which would connect with TCA's existing route to New York are viewed as actually a bid by the Canadian carrier to furnish new service from the U. S. Northwest to the East Coast over an airway Canadians contend is shorter than that of any U. S. airline.

With post-war flying equipment enabling TCA to tackle the long over-the-Lakes hop to Toronto, the line would only need entry into Seattle to set up a U. S. coast-to-coast operation of approximately 3,500 miles, some 270 miles shorter than the projected Northwest Airlines transcontinental run. Landing permission at Seattle would also give TCA opportunity to furnish single-carrier service to Europe for traffic originating in the U. S. Northwest.

Equipment Awaited—Although neither the Winnipeg-to-Toronto, nor Vancouver-to-Seattle plans has been announced officially, it is

known that TCA is awaiting only suitable equipment before requesting the Canadian Government to seek U. S. permission for the Seattle extension. This is at present an exclusive route of the United Air Lines and the air service agreement between the U. S. and Canada would have to be amended before TCA could achieve its ambition.

The agreement, however, expires at the end of the war and Canadians are confident that when it is renewed the Dominion will be granted any route it requests. They point out that trans-border service is heavily out of balance in favor of U. S. operators. TCA flies only to New York, while U. S. carriers go into Montreal, Montreal, Toronto, Windsor, Winnipeg, Lethbridge and Vancouver. The agreement allowed Canada one route that has never been opened, Detroit to any point in the Dominion.

Route Shorter than United's—TCA's present operation from the Pacific Coast to New York is roughly 3,800 miles shorter than United's corresponding route, but the Canadian line's elapsed time is more than one hour greater. With Douglas DC-4s replacing its Lockheed after the war, TCA expects to better the coast-to-coast time of any U. S. airline.

CAA to Decentralize Medical Division

Decentralization of the Civil Aeronautics Administration's Medical Division looking toward a vast upswing in private flying is under way, according to Dr. W. R. Stevick, Chief of CAA's Aviation Medical Division.

Addressing the 16th annual meeting of the Aero Medical Association at St. Louis, Mo., he outlined other steps his division is taking to prepare for the heavy increase in physical examinations which will be required of those seeking pilot's certificates of various classes.

Regional Offices—Regional medical offices have been proposed to ease the burden on individual medical examiners and to streamline administrative procedures, and Stevick indicated they might be established during the next year.

Stevick urged extreme caution in easing the physical requirements for student and private pilot certificates as proposed by the Civil Aeronautics Board's Safety Bureau.

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"Circle 10 on Reader"

All American Plans New Pickup Designs

Pioneer airline route expansion program after completion of best year in company's history.

With designs for new pickup planes on the boards, and interest in this type of air operation growing not only in the United States but in other countries, All American Aviation, pioneer in the field, looks to another good year after the best in its history.

President Haley B. Bailey's annual report to stockholders for the year ended June 30 showed net income after all charges of \$338,583, equal to 78 cents a share on \$446,600 common outstanding, after preferred dividends. A year earlier, net income was \$327,669, or 11 cents a share.

Expansion.—The company plans expansion of its routes beyond the past year's increases, and has been talking with aircraft manufacturers about development of a plane for combination passenger and airmail pickup service.

Consolidated Vultee is said to be working on designs for a 10-passenger plane with pickup equipment. Consolidated Vultee has also been talking with Wright Corp. as to the problem. Douglas has proposed its Sky-Bus, and Martin its Model

302. Virtually any conventional plane can be adapted to pickup by removal of some seats and installation of equipment.

All American's manufacturing and development divisions accounted for \$426,673 during the year ended June 30. The Air Transport Division produced \$553,083. Revenues made valuably by the company on its own contracts decreased the manufacturing gross by \$601,700.

Pickup System Used by Army.—Details of the production contracts for the Army Air Forces could not be told, but Bailey disclosed that the company has further contracts for this type of plane. In the 1945 fiscal year, the statement of All American pickup equipment "found applicants" in active theaters of war presumably was a reference to glider pickup. Some glider acquisition contracts have been installed on virtually all types of military aircraft. This even applies, in some isolated instances, to fighter planes.

Some airline operators who have visited All American to study its operations, many times flying its pickup routes, have come from Canada, the British Isles, Central America, Brazil, Sweden and Australia.

Financial Report.—At fiscal 1944's end, the company's current assets were \$1,100,362 and current liabilities \$322,392 against \$773,288 and \$601,257 respectively for the previous year. Net working capital increased \$364,368.

Size of 26,216 shares of 4 percent convertible non-cumulative preferred stock increased the financial statement, yielding a net of \$688,535. Initial dividend of 50 cents was paid March 1, and a second of the same amount per share Sept. 1.

Traffic Increases.—Air mail traffic increased 71.7 percent over 1943. Air express was up 31 percent. Route extensions and new schedules increased scheduled mileage 1,834 miles a day to 4,572. In two years of military cargo service, terminated July 16, the line's single-engine cargo planes flew 1,917,738,348 miles and carried 2,461,000 pounds of cargo without serious loss or damage. New routes for which All American has applied would add 4,818 miles and 428,000 pounds to its present 113-point system.

As a memorial to Richard C. de Paet, its founder and first president, the company has made a gift to Mass. Institute of Technology for research in aviation subjects.

Boeing Gives Data On Modified 307-J's

Boeing Aircraft Co. has prepared an engineering report on its Aircraft Model 307-J as modified for Transoceanic 1's, and Western Air, looking toward sales to the transport industry of future production.

Army Air Forces recently returned to TWA five Stratofortress previously requisitioned for war service. These airplanes are undergoing modifications at the Seattle Boeing plant. Changes include installation of Parteeu B-17-G wings, tail section and landing gear. The new design has a greater wing strength, increased stability, and higher performance.

Prepar for Non-War Production.—Boeing is preparing to make use of both of manufacturing facilities that may be released in future for non-war production. Due to the great demand for B-17's and B-29's and, during a long period, for the Kuyper trainer, Boeing has been unable to produce its post-war activities. Though several efforts were made, Navy was unable to accept the production of Boeing's "Love Ranger" XPB-1 flying boat, which was accepted with high approval, and which has good commercial characteristics.

It is believed that specifications and performance data on proposed production of the 307-J are substantially the same as those of the two TWA units now being modified. The new design has a gross weight of 54,000 pounds, and 66 inches have been added to the fuselage.

Supercharged.—Cabin supercharger is retained in the modified production of the 307-J. The pressurizing equipment will maintain an 8,000-foot atmosphere at 15,000 feet and permit benefits of altitude operations and other things with practicality with passengers.

One cabin arrangement permits seating of 47 passengers, and another 49 passengers. There are two cargo compartments, located under the passenger deck, but without, with a total capacity of about 500 cubic feet. One hundred cubic feet of baggage space is located back of the cabin.

The 47-passenger arrangement is one tier of three seats and one of two seats of two seats. The 49-passenger arrangement is two tiers of

two seats. A cockpit crew of three, and a cabin crew of two, are required.

Data.—The new Stratofortress is said to be in the medium range class, with a reach of more than 1,000 miles with maximum payload, maximum range, weight more than 54,000 pounds, and maximum landing weight is over 47,000. Required length of take-off at maximum allowable weight is 3,100 feet, landing 4,000 feet, both at sea level.

Maximum altitude with one engine inoperative is reported as more than 10,000 feet. Operating empty, weight of the airplane is 34,000 pounds. Wing load is 100 pounds per square foot. Maximum speed supercharged engines, rated at 1300 hp. from sea level to 5500 feet are specified, with several Wright and Pratt & Whitney alternatives of higher horsepower.

CAB ACTION

Chief Administrator moved up appointment. Bureau of Civil Aeronautics, Washington, D.C., has moved its headquarters to the new building at 1000 K Street, N.W.

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heads the Boeing 314's of the first transport plane, the Lockheed L-10A, which is now in service. Boeing, Seattle, is a group in a position to make future deliveries and to supply.

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MNB Rules on AA Flight Engineers

National Mediation Board has held that American Airlines flight engineers are not a separate craft for representation purposes under the Railway Labor Act, but are part of the craft or class of airline mechanics.

The Flight Engineers Association asked last December that the Board investigate a representation dispute among American's flight engineers, in which the Avia Mechanical Association was the other party, the question being whether the flight engineers constituted a separate group.

Details Held Similar.—The Board reports that its investigation and company statements show that "handed from the checks and inspection required of flight engineers in connection with flight duty, their essential duties are the same as those of ground maintenance forces, i.e., performing mechanical work in maintaining the equipment."

Only 81 employees were listed in the gross the Flight Engineers Association. It was on a separate craft or class, compared with more than 1,500 in the mechanical group.

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The Operator Speaks

LIGHTHOUSE MANUFACTURERS could read each issue of the NATA dispatch with profit. The anti-union-aggressive mimeographed news-letter of National Aviation Trades Association, crisscrossed with news and realistic observations, wastes no words in spelling the collective mind of the fixed base operator.

Worth quoting:

"Factory representatives seem very worried that the operators are not properly merchandising their products, and are offering many valuable suggestions . . . Our reply has been that there is a slight period of survival to undergo before we build the air-conditioned, green-glass rosted showerhouse lounge on the field site of our new sales-restaurant-administration-office-club building, and that someone had better make some new 1-2 control, fast, slow landing, hands-off flying, 3-4 wheeled, comfortable utility machine, with built-in tail winds and self-aid weather features and not try to sell the already sold, much talked public a pre-war model with nothing new except the conversation.

"As a matter of fact, we are sadly disappointed at some of the post-war prospects, although some look more than good. After a while you don't quite know whether the answer is to make pilots and sell them the airplanes or make an airplane that flies itself and let it make the pilots, and then sell them an airplane. Some of the boys figure that maybe someone will break loose with a new one, but most feel that for a while the public will buy any airplane and that after a settling period someone who knows nothing about aviation will come along with a simple Model T that will have some utility. Certainly we all will be glad for anything new to sell so the public can see what value really is after buying some of the surplus junk we as a starter."

That's the plant salesman of the future speaking, in his own language. We have seen 5,000-word articles written on this subject that said less.

Congress Must Wake Up

CONGRESS HAS BEEN discussing the demobilization of American industry for nearly 18 months. There still is no legislation to guide recovery efforts. Now, faced with imminent collapse of Germany and a conservatively-estimated 40 percent cutback in war production, Congress has been considering postponing action on some vital phases of the problem until after the election in November.

House and Senate conferees in violent dispute over unemployment benefits, have failed utterly to reach any agreement. The Senate has sought to extend unemployment benefits to an estimated 3,000,000 Federal employees and to provide funds to finance the return home of war workers who migrated to war production centers. The House conferees refused to accept. The issues grew larger as discussions went on and a stalemate developed.

Last week the conferees openly admitted they had progressed nowhere on the important measures,

and abandoned their efforts. The only other alternative—and one which appeared to appeal to both House and Senate late last week—was to postpone as much action as possible until after the election.

Overlooked as disregarded by political-minded Congressmen is the fact that Germany may have quit the war by November and that nearly half of the nation's war plants may be either idle or operating at half-capacity. Congress needs to be reminded, finally, now rather than later, that the prime purpose of reconstruction legislation is to prevent chaos during the transition period. Congress has sole responsibility to prevent chaos. It has failed to date to take proper action.

Coast Guard's Air Aid

COAST GUARD has decided to continue its valuable and efficient air-sea rescue service after the conflict ends. With sufficient funds it will be extended to match the service's excellent sea rescue operations, with coordination of ships and planes both for protection of private and commercial flying, not only near our shores but also in trans-oceanic operations. Coast Guard ships can function as weather reporting and survey aids as well as far marine purposes.

The service will need more bases, many more planes. Few realize that it has only nine bases along all U. S. coastlines. Operations, which probably will cover the Great Lakes, and oceanic iceberg patrol, will be an excellent training school for pilots.

The Bureau of the Budget and Congress should study the Coast Guard's proposals with great care when budget estimates are prepared, to make certain that maximum value to the national defense and safety for the flying public is assured.

Why Not Speak Publicly?

HOUSE MERCANTILE MARINE COMMITTEE did the country a service when it opened hearings which, in the words of Chairman Hildner, "open the Congress in arriving at a sound international aviation policy." Although the committee seeks to aid steamship interests in obtaining permission to operate air services, it is noteworthy that the hearings were open to the public and that a decidedly anti-choosen instrument current was evident throughout the earnest and shipping witnesses were heard. It is known what stand the domestic airlines would take if they testified.

All this is in contrast with the unwelcome manner in which the Senate Aviation Subcommittee has been approaching the vital question of our post-war international aviation prospects. Not one open hearing has been held by that group, from which it is rumored a pre-choosen instrument report soon may issue.

The burden of proof is on the monopolists. They should appear before the public the questionable arguments they have been making before the few Senators whose favor they have won. Perhaps the trend shown in the House committee is indicative of what would happen to monopoly proponents if they encountered their business in the open.

ROBERT H. WOOD



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4. High efficiency and power factor.

The new Westinghouse Type WC-AC Welder eliminates the need for "adapting" welders intended for other types of service with their slower and less flexible performance. Superimposed high frequency makes the a-c arc practical on light materials at low currents and boosts welding output. Further, the price of the Type WC-AC welder is comparable with that of regular dc welders.

For more information on these Westinghouse High-Frequency Stabilized A-C Welders, call your nearest Westinghouse Electric, or write today to Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. 730412

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1. High-frequency arc stabilization permits operation on materials as thin as .015 in. and holds it steady at current settings as low as 10 amperes.
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3. Double range current adjustment for making of special alloys—results in extremely fine current adjustment from 25 to 75 amperes.
4. Pivot control indicator permits adjusting for desired welding current before starting.
5. Built-in handle electrode holder (included in accessories) provides pilot control of the high-frequency stabilizer.



Wizard in a Box

How this G-E computer works is still known only to its designers (shown here) and persons intimately connected with the Superfortress. As a part of the B-29 gunfire-control system (also developed by G.E.) it calculates lead, windage, gravity, and other factors in the mathematics of aerial gunnery.

The B-29 gunfire-control system and the equipment for this plane's pressurized cabins are two of many engineered systems G-E laboratories have developed for aircraft. *General Electric Company, Schenectady 5, N. Y.*



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